

Preliminary Findings



Federal Aviation
Administration

The Economic Impact of Civil Aviation on the North Atlantic (NAT)

Presented to: ICAO NAT EFFG 34

Paris, France

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Briefing:

- **Background – Global Economic Impact**
- **NAT Concept and Impact Methodology**
- **Results of NAT Estimates for 2017**



Global Impact of Air Transport, 2014

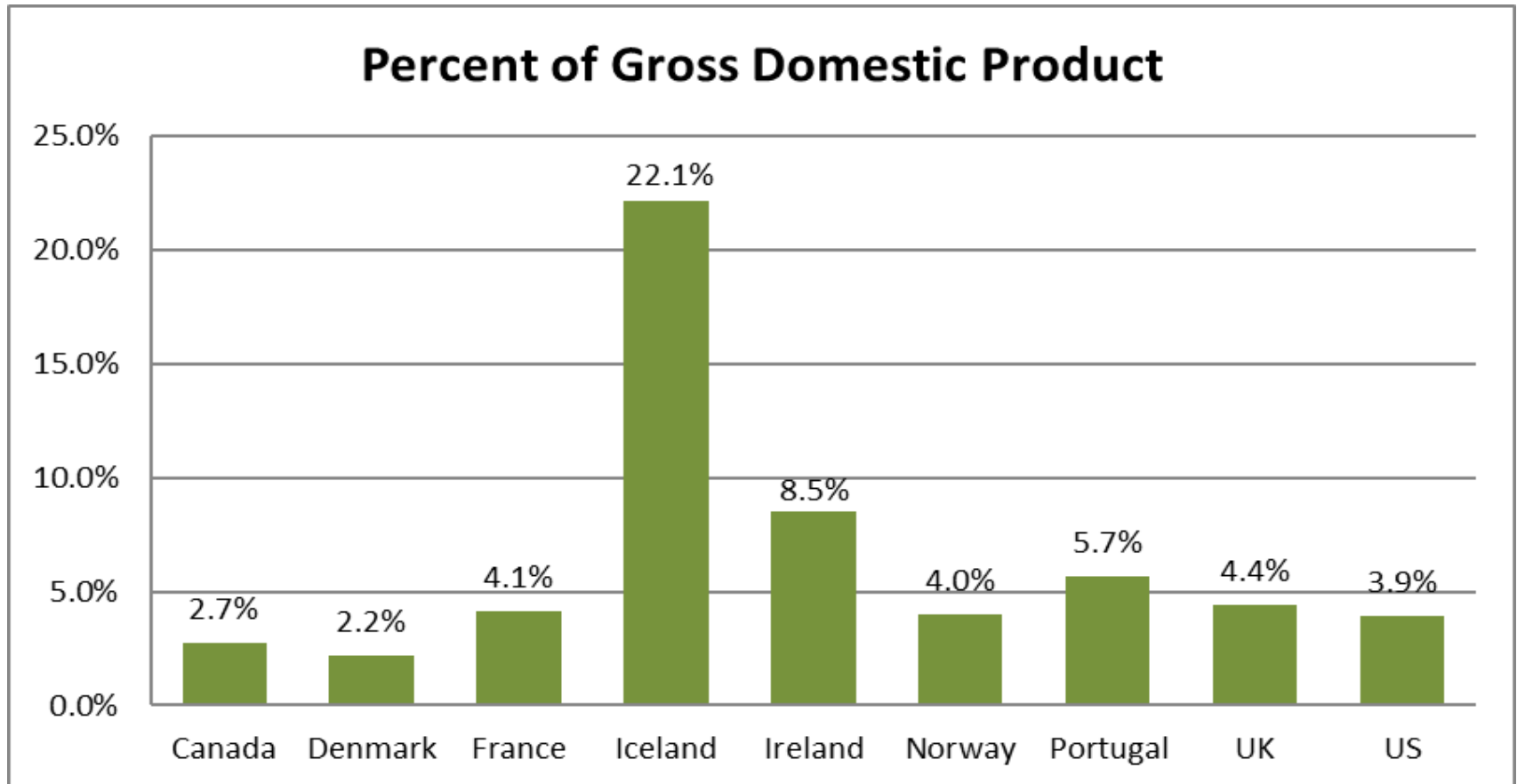


Global Air Transportation contributes:

- USD \$2.7 trillion global economic impact
- 3.5% to global GDP
- 63 million Jobs

Source: Air Transport Action Group, <https://aviationbenefits.org/>

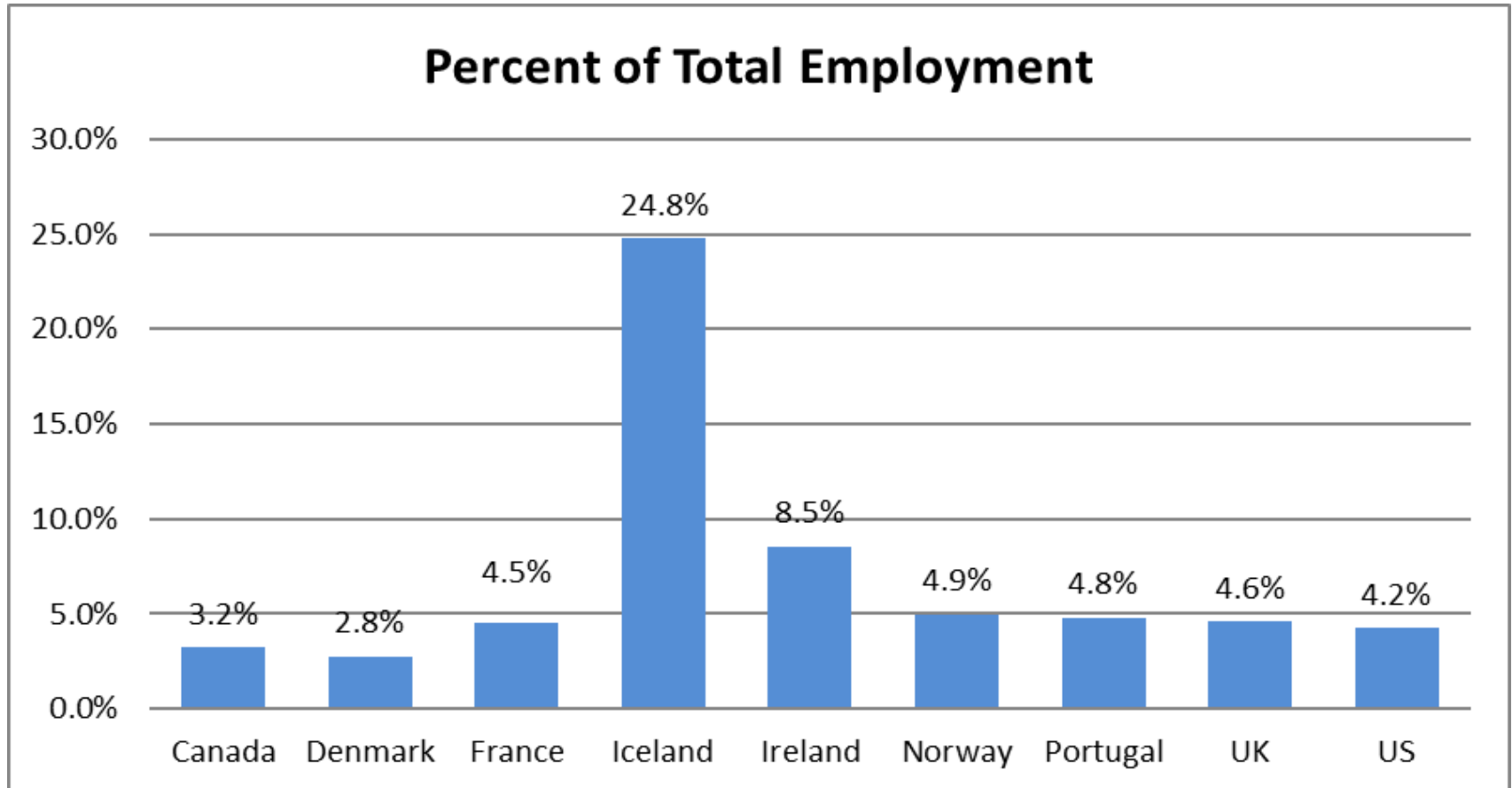
Air Transport Economic Impact: GDP - NAT Members, 2014



Source: International Air Transport Association (IATA), <http://www.iata.org/publications/economics/Pages/index.aspx>

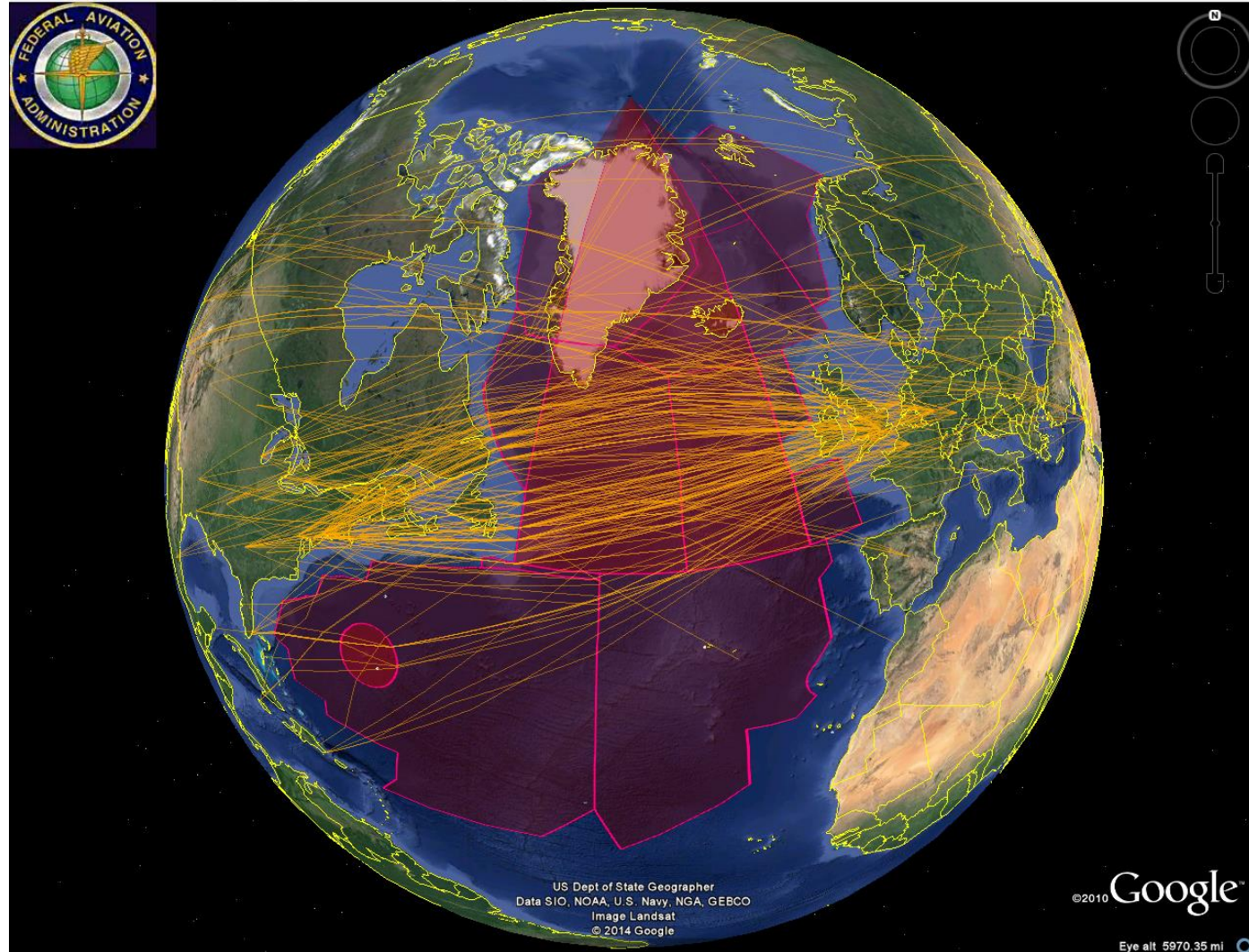


Air Transport Economic Impact: Jobs - NAT Members, 2014



Source: International Air Transport Association (IATA), <http://www.iata.org/publications/economics/Pages/index.aspx>

NAT Region at a Glance



*FIRs in the NAT Region include: New York Oceanic, Gander, Sondrestrom, Bodo, Reykjavik, Shanwick, and Santa Maria.

NAT Region Statistics– 2017

- **Annual Operations¹**
 - Number of flights: 723,356
 - 712,620 passenger flights
 - 10,736 cargo flights
- **Passengers and Cargo²**
 - Passengers: More than 130 million carried
 - Cargo: Approximately 37 billion freight RTMs transported

¹ FAA TFMS Data and *supplementary data for Santa Maria (37k for 2017)*

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



Economic Values - 2017

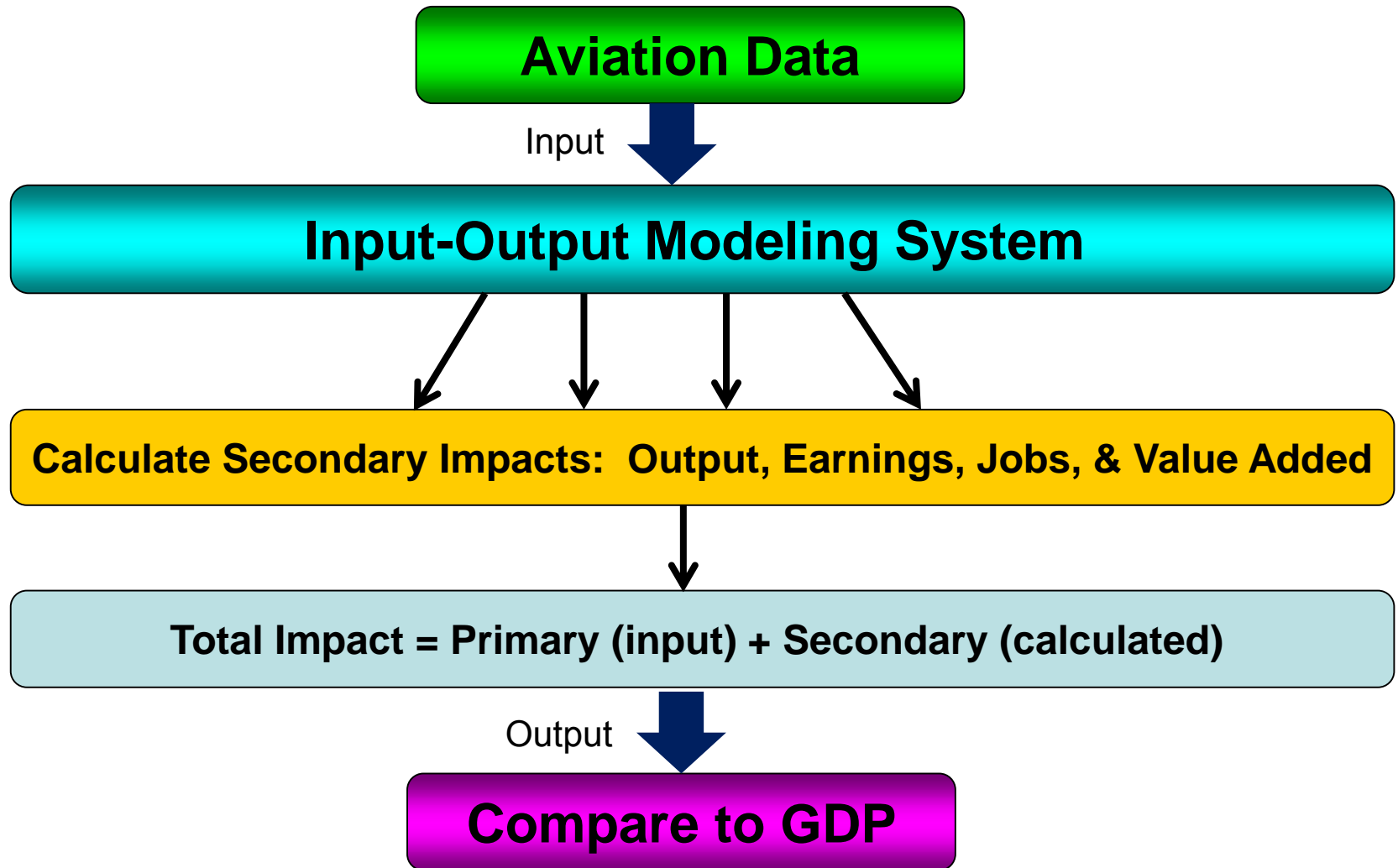
- **Average Values in NAT**
 - Round-trip passenger fare: \$1,390
 - Visitor Expenditure: \$2,480
 - Revenue per cargo flight: \$154,500
 - Revenue (fare) per passenger flight: \$130,900
 - Freight revenue per passenger flight: \$12,600
 - Average miles per departure: 4,070

Source Data: FAA calculations using U.S. DOT/BTS Form 41 data and visitors data from selected countries;
Some visitor data not available yet for 2017 were estimated based on 2016 data.

Passenger fare: Total fare paid by passenger, including taxes and fees.



Economic Impact Methodology



NAT Estimate Methods and Sources

Primary Output: Estimate Methods (P*Q) and Sources

Category	Quantity (Q)	Price (P)	Data Source
Airline operations - Passengers	Passenger Flows	Average Passenger Fare	(Q) FAA TFMS (ETMS) NAT flights and USDOT/BTS load factors
			(P) BTS average passenger fare, freight revenues and RTMs
Airline operations - Freight	Freight RTMs	Average Revenue per RTM	(Q) TFMS NAT flights and BTS RTMs per flight, by operation type
			(P) BTS freight revenues and RTMs, by operation type
Visitor Expenditures	Visitor Flows	Average Spending per Visitor	(Q) Passenger flows and visitors data from selected countries ¹
			(P) Visitors and spending data from US, UK and Canada agencies ¹
ANSP Fees	-	-	NAT fees and revenue data from EFFG and ANSP annual reports

¹US International Trade Administration (ITA), UK Office of National Statistics, Statistics Canada and Canadian Tourism Commission.

- Estimates except ANSP Fees are calculated using matrix tables (By Country-Pairs, To and From).
- Countries include 8 NAT member countries and Rest-of-NAT.
- Freight estimates include freight in cargo flights and freight in passenger flights.

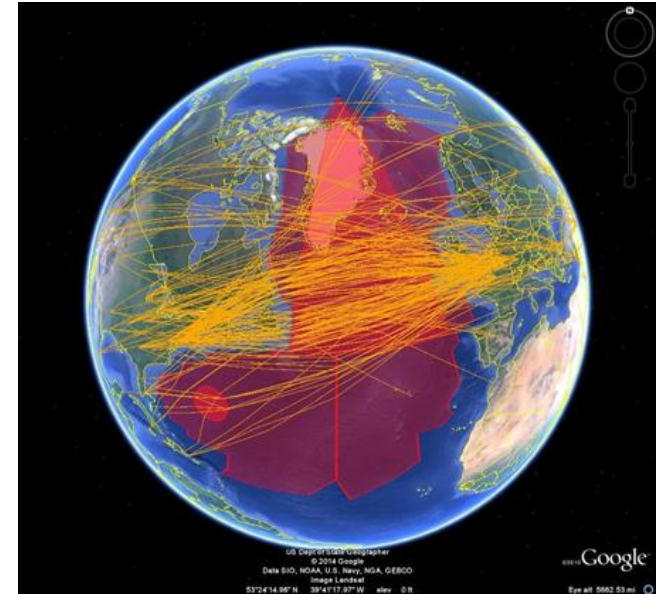
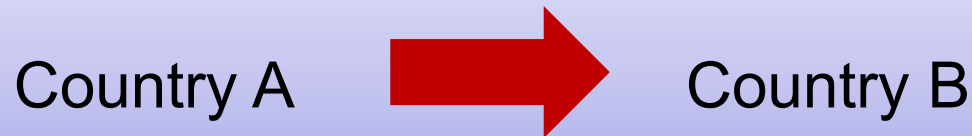


Air Transportation Flows

Passenger Flow – Round Trip:



Freight Flow:



NAT Primary Output Matrix - 2017

Total Primary Output¹: Country-Pairs Matrix (Millions of Dollars)

From: \ To:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	\$ -	\$ 93.3	\$ 270.4	\$ 219.6	\$ 41.7	\$ 226.8	\$ 6,313.6	\$ 1,892.7	\$ 23.3	\$ 9,081
Denmark	\$ 67.6	\$ 80.3	\$ 31.5	\$ -	\$ -	\$ 5.0	\$ 26.5	\$ -	\$ 1,742.9	\$ 1,954
Iceland	\$ 206.7	\$ 48.5	\$ -	\$ 39.0	\$ 3.8	\$ 0.0	\$ 947.3	\$ 202.8	\$ 1,607.3	\$ 3,056
Ireland	\$ 165.7	\$ -	\$ 39.0	\$ -	\$ -	\$ 0.2	\$ 38.9	\$ 0.0	\$ 3,056.4	\$ 3,300
Norway	\$ 32.1	\$ -	\$ 2.3	\$ -	\$ -	\$ 3.6	\$ 113.7	\$ -	\$ 993.9	\$ 1,145
Portugal	\$ 165.7	\$ 4.2	\$ 0.0	\$ 0.3	\$ 3.4	\$ 807.1	\$ 742.0	\$ 50.0	\$ 955.7	\$ 2,728
ROW	\$ 4,961.6	\$ 17.5	\$ 474.3	\$ 21.0	\$ 71.4	\$ 559.0	\$ 28,625.7	\$ 2,049.9	\$ 75,315.5	\$ 112,096
UK	\$ 1,640.6	\$ -	\$ 379.0	\$ 0.0	\$ -	\$ 331.8	\$ 6,096.6	\$ -	\$ 27,701.4	\$ 36,149
USA	\$ 10.1	\$ 999.6	\$ 2,542.1	\$ 3,515.6	\$ 395.7	\$ 1,689.1	\$ 71,641.4	\$ 17,958.0	\$ 2,636.5	\$ 101,388
Total (To:)	\$ 7,250	\$ 1,243	\$ 3,739	\$ 3,795	\$ 516	\$ 3,623	\$ 114,546	\$ 22,153	\$ 114,033	\$ 270,898

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

NAT Primary Output Matrix - 2017

Total Primary Output¹: NAT-8 vs. ROW (Millions of Dollars)

From: \ To:	NAT-8	ROW	Total (From:)
NAT-8	\$ 72,883	\$ 85,920	\$ 158,803
ROW	\$ 83,470	\$ 28,626	\$ 112,096
Total (To:)	\$ 156,353	\$ 114,546	\$ 270,898

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



Total Primary Output by Country (Includes ANSP Fees)

NAT Region Economic Impact in USD, 2017

Canada

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	7,682
Airline Operations - Freight	1,050
ANSP Fees	35
Visitor Expenditures	7,599
Total Impact	16,367

Ireland

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	2,172
Airline Operations - Freight	294
ANSP Fees	25
Visitor Expenditures	4,630
Total Impact	7,121

U.K.

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	22,197
Airline Operations - Freight	2,299
ANSP Fees	38
Visitor Expenditures	33,807
Total Impact	58,341

Denmark

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	1,051
Airline Operations - Freight	118
ANSP Fees	10
Visitor Expenditures	1,948
Total Impact	3,127

Norway

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	505
Airline Operations - Freight	52
ANSP Fees	9
Visitor Expenditures	1,104
Total Impact	1,670

U.S.

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	67,414
Airline Operations - Freight	7,548
ANSP Fees	18
Visitor Expenditures	137,823
Total Impact	212,803

Iceland

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	1,897
Airline Operations - Freight	505
ANSP Fees	65
Visitor Expenditures	4,392
Total Impact	6,859

Portugal

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	1,871
Airline Operations - Freight	402
ANSP Fees	45
Visitor Expenditures	3,272
Total Impact	5,589

R.O.W. (Rest of NAT)

Description	(\$Millions)
Direct and Indirect Impacts	Primary Output
Airline Operations - Passengers	68,480
Airline Operations - Freight	7,411
ANSP Fees	-
Visitor Expenditures	122,125
Total Impact	198,016



NAT Region Total Economic Impact - 2017

Description	Output (\$ Millions)		Earnings (\$ Millions)	Jobs (000s)
	Primary	Total	Total	Total
Impacts				
Airline Operations - Passengers	93,279	223,908	54,680	1,053
Airline Operations - Freight	10,642	29,806	9,021	240
ANSP Fees	245	543	155	4
Visitor Expenditures	166,977	415,323	120,491	3,294
Total Impact	271,144	669,580	184,347	4,590



NAT Summary Stats and Economic Values, 2017

Total Economic Impact					(If remove 2017 SM data)		
(\$ Billions)	2012	2017	Change	%Change	2017 (Adjusted)	Adjustment	%Chg (Adjusted)
Total NAT Impact	594	670	76	12.7%	653	(17)	9.9%
Annual Operations					(If remove 2017 SM data)		
(# Flights)	2012	2017	Change	%Change	2017 (Adjusted)	Adjustment	%Chg (Adjusted)
Total NAT Flights	547,907	723,356	175,449	32.0%	686,356	(37,000)	25.3%
Passenger	536,309	712,620	176,311	32.9%	675,620	(37,000)	26.0%
Cargo	11,598	10,736	(862)	-7.4%	10,736	-	-7.4%
Passengers and Cargo					(If remove 2017 SM data)		
(Millions)	2012	2017	Change	%Change	2017 (Adjusted)	Adjustment	%Chg (Adjusted)
Passengers Carried	109	134	25	23.4%	129	(5)	18.8%
Freight Transported (RTM)	27,000	36,700	9,700	35.9%	34,900	(1,800)	29.3%
Average Values in the NAT					(Remove 2017 SM data here does NOT have much effect)		
(Averages)	2012	2017	Change	%Change	2017 (Adjusted)	Adjustment	%Chg (Adjusted)
Round-trip passenger fare	\$ 1,510	\$ 1,390	\$ (120)	-7.9%	\$ 1,400	\$ 10	-7.3%
Visitor expenditures	\$ 2,300	\$ 2,480	\$ 180	7.8%	\$ 2,530	\$ 50	10.0%
Revenue per cargo flight	\$ 182,500	\$ 154,500	\$ (28,000)	-15.3%	\$ 154,500	\$ -	-15.3%
Revenue (fare) per pax flight	\$ 153,900	\$ 130,900	\$ (23,000)	-14.9%	\$ 133,900	\$ 3,000	-13.0%
Freight revenue per pax flight	\$ 13,860	\$ 12,600	\$ (1,260)	-9.1%	\$ 12,600	\$ -	-9.1%
Average miles per departure	4,400	4,070	(330)	-7.5%	4,120	50	-6.4%
					<i>(Other factors: exchg rates, rev yields, flt distribution, etc.)</i>		

Summary

- **Global Aviation *is projected* to contribute USD \$3.1 trillion to world economy and 69 million jobs in 2017**
- **NAT Region Economic Impact (gross output) is USD \$670 billion and 4.6 million jobs**
 - NAT accounts for about 14% of global aviation GDP
 - Nearly 7% of global aviation jobs



Backup Slides



Passenger Flow Matrix (000s) - 2017

To:\nFrom:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	-	67.1	237.5	162.8	0.4	167.9	5,355.1	1,547.9	16.3	7,555.2
Denmark	66.7	139.3	4.0	-	-	7.2	25.6	-	555.5	798.4
Iceland	243.4	142.1	-	88.3	11.58	-	1,007.0	770.0	988.0	3,250.4
Ireland	193.1	-	85.8	-	-	-	34.9	-	1,787.4	2,101.2
Norway	0.5	-	0.1	-	-	4.0	107.5	-	273.1	385.3
Portugal	170.1	4.6	0.1	0.8	4.7	1,295.0	530.7	141.6	513.5	2,661.1
ROW	5,127.2	9.1	814.4	34.6	77.2	511.7	15,835.1	2,227.0	28,937.9	53,574.1
UK	1,606.3	-	401.0	0.3	-	442.7	3,431.8	-	10,231.4	16,113.5
USA	14.0	557.6	981.0	1,565.7	282.3	505.7	30,518.4	10,268.2	3,333.6	48,026.5
Total (To:)	7,421.3	919.8	2,524.1	1,852.4	376.2	2,934.3	56,846.2	14,954.7	46,636.7	134,465.7

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



Average Round Trip Fare - 2017

From: \ To:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA
Canada	\$ -	\$ 1,263	\$ 840	\$ 1,059	\$ 1,107	\$ 1,156	\$ 988	\$ 1,152	\$ 1,000
Denmark	\$ 1,263	\$ 271	\$ 431	\$ 193	\$ 193	\$ 658	\$ 1,302	\$ 260	\$ 1,598
Iceland	\$ 840	\$ 431	\$ -	\$ 297	\$ 359	\$ 594	\$ 459	\$ 381	\$ 1,010
Ireland	\$ 1,059	\$ 193	\$ 297	\$ -	\$ 260	\$ 490	\$ 591	\$ 52	\$ 1,155
Norway	\$ 1,107	\$ 193	\$ 359	\$ 260	\$ -	\$ 721	\$ 824	\$ 242	\$ 1,525
Portugal	\$ 1,156	\$ 658	\$ 594	\$ 490	\$ 721	\$ 297	\$ 1,234	\$ 394	\$ 1,408
ROW	\$ 988	\$ 1,302	\$ 459	\$ 591	\$ 824	\$ 1,234	\$ 1,572	\$ 1,399	\$ 1,538
UK	\$ 1,152	\$ 260	\$ 381	\$ 52	-	\$ 394	\$ 1,399	\$ -	\$ 1,569
USA	\$ 1,000	\$ 1,598	\$ 1,010	\$ 1,155	\$ 1,525	\$ 1,408	\$ 1,538	\$ 1,569	\$ 381

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



NAT Freight Flights - 2017

From: \ To:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada							11	2		13
Denmark										-
Iceland										-
Ireland									5	5
Norway										-
Portugal									1	1
ROW	8						13		4,015	4,036
UK	4								958	962
USA			1	3	1	1	3,914	1,036	763	5,719
Total (To:)	12	-	1	3	1	1	3,938	1,038	5,742	10,736

Source: TFMS, NAT Flights

Note: No reported data for some NAT member countries



Commercial Passenger Flights - 2017

From: \ To:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	-	282	1,898	1,094	16	889	29,539	8,018	153	41,889
Denmark	282	1,845	37	-	-	74	224	-	2,715	5,177
Iceland	2,061	1,013	-	619	88	-	6,936	5,443	6,374	22,534
Ireland	1,292	-	614	-	-	-	304	-	10,180	12,390
Norway	10	-	-	-	-	38	763	-	1,278	2,089
Portugal	900	53	-	8	44	11,563	3,819	1,265	2,888	20,539
ROW	28,025	111	5,871	271	543	3,876	79,305	11,352	145,381	274,734
UK	8,383	-	2,890	-	-	3,606	19,705	-	48,402	82,986
USA	134	2,763	6,229	8,849	1,365	2,818	154,339	48,808	24,977	250,282
Total (To:)	41,087	6,067	17,539	10,841	2,056	22,863	294,934	74,886	242,348	712,620

Source: TFMS, NAT Flights



Unique Visitor Flow Matrix (000s) - 2017

To:\nFrom:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	-	40.1	144.0	106.6	42.3	101.2	3,225.8	767.9	10.3	4,438.2
Denmark	26.8	69.6	36.5	-	-	3.0	8.7	-	353.6	498.3
Iceland	96.5	36.5	-	43.5	2.9	0.0	455.4	157.6	361.6	1,154.0
Ireland	71.4	-	43.5	-	-	0.2	17.4	0.075	644.2	776.7
Norway	28.3	-	2.9	-	-	2.2	46.2	-	208.6	288.2
Portugal	67.8	3.0	0.0	0.2	2.2	647.5	260.6	36.1	205.2	1,222.6
ROW	2,171.9	8.7	455.4	17.4	46.2	260.6	7,917.5	761.4	15,319.4	26,958.4
UK	582.5	-	427.9	0.058	-	256.1	2,068.0	-	6,113.1	9,447.8
USA	4.9	196.9	794.0	993.9	79.6	363.9	14,299.7	4,049.1	1,666.8	22,448.7
Total (To:)	3,050.0	354.9	1,904.4	1,161.6	173.2	1,634.6	28,299.3	5,772.0	24,882.9	67,232.8

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