ICAO UNITING AVIATION

Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis

Montréal, Canada
3 April 2020

Contents

- **Introduction, background and situation overview**
- **Global level analysis**
  - Impact on International Passenger Traffic
  - Impacts on Airports and Tourism
- **State level scenario analysis**
  - China
  - Republic of Korea
  - Italy
  - Iran (Islamic Republic of)
- **Appendix: Scenario assumptions**

The preliminary estimates indicate the COVID-19 impact on scheduled international passenger traffic during first half 2020, compared to Baseline (originally-planned):

- Overall reduction of **37 to 48% of seats offered by airlines**
- Overall reduction of **411 to 535 million passengers**
- Approx. **USD 90 to 118 billion potential loss** of gross operating revenues of airlines

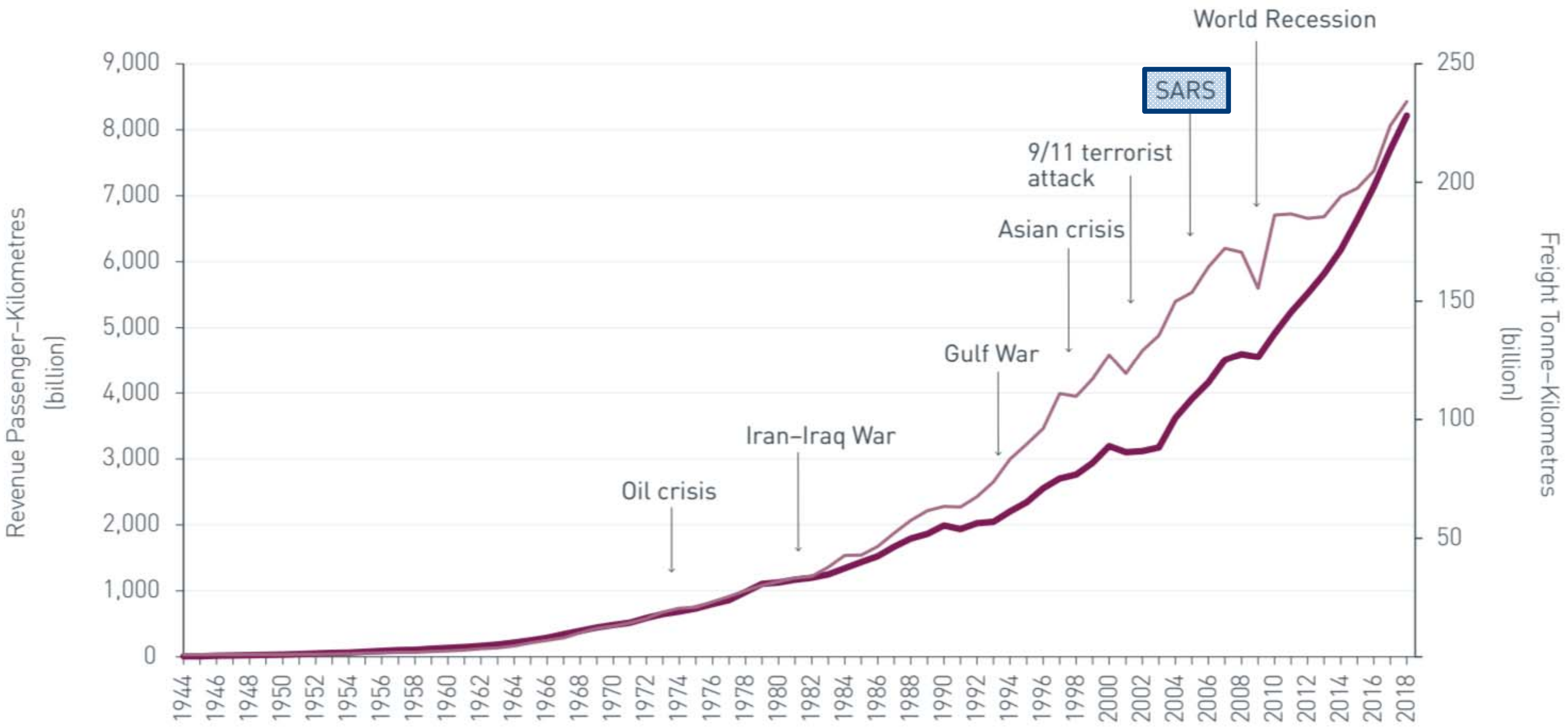
Biggest overall impact is expected in Europe and Asia/Pacific, followed by North America and Middle East.

If the current-level contraction continues to September 2020, airlines would lose over USD 35 billion gross operating revenues every month in the 3rd quarter 2020, hitting summer travel peak season, especially in Europe and North America.

Introduction, Background and Situation Overview

ICAO UNITING AVIATION

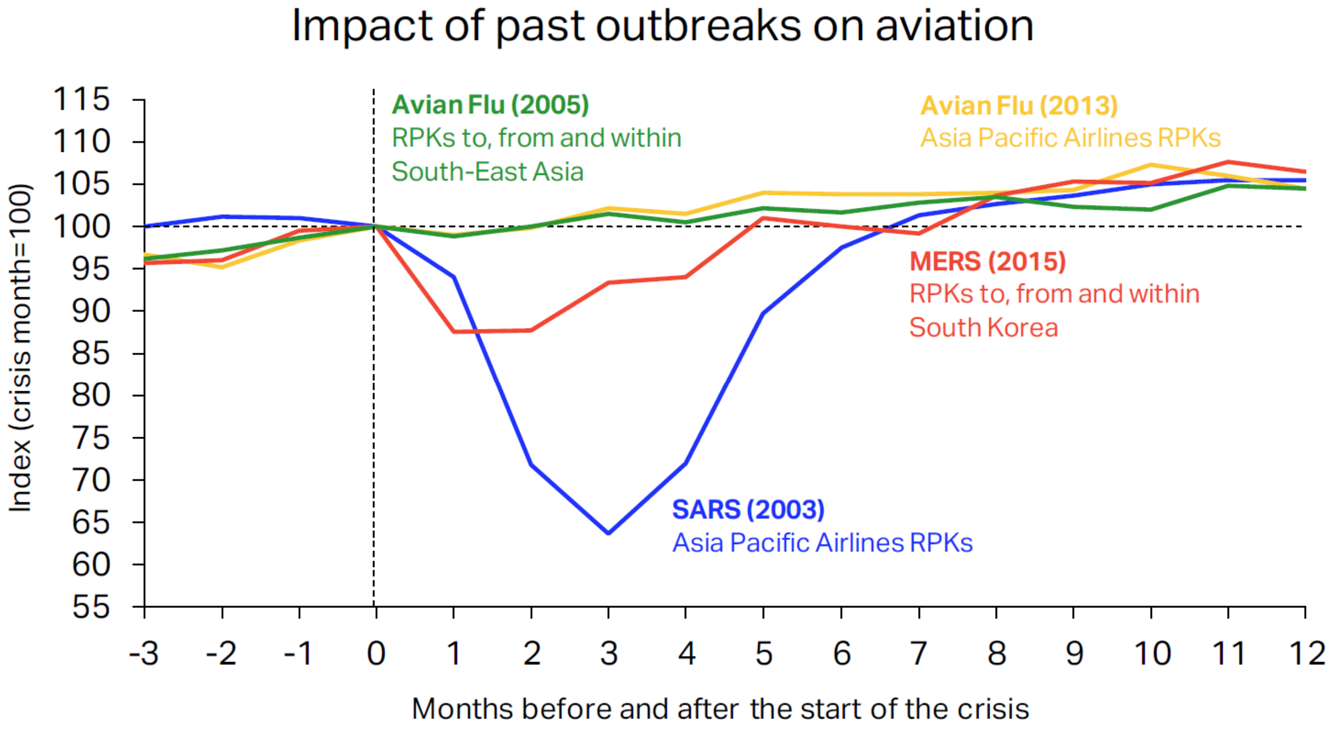
Air traffic has been vulnerable to external factors including disease outbreaks



Source: ICAO Annual Report of the Council

Scheduled commercial traffic
Total (international and domestic) services

Previous outbreaks/pandemics had a V-shaped impact on aviation

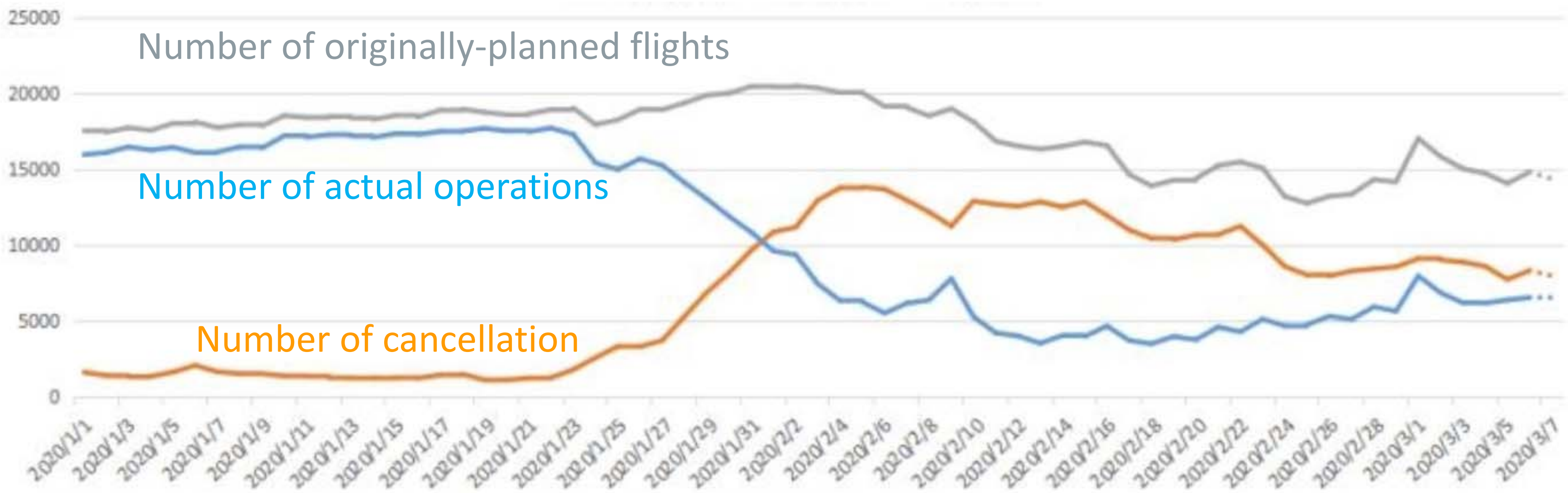


Source: IATA Economics

History shows that SARS has the most serious impact on traffic. At the height of the outbreak (May 2003), monthly RPKs of Asia-Pacific airlines were 35% lower than their pre-crisis levels. Overall in 2003, Asia-Pacific airlines lost **8% of annual RPKs and $6 billion of revenues**.

Source: IATA Economics' Chart of the Week (24 January 2020)

COVID-19 outbreak has impacted air traffic for China starting from late January 2020



Note: The above includes a) international from mainland China, Hong Kong SAR of China, Macao SAR of China, Taiwan, Province of China; b) domestic within mainland China, and c) regional between mainland China and Hong Kong SAR, Macao SAR and Taiwan Province

Source: CARNOC.com/VariFlight (retrieved on 9 March 2020)

ICAO UNITING AVIATION

A surge of COVID-19 confirmed cases occurred in several States by late February 2020

February 2020	International passenger seat capacity		
Country/Territory		Capacity change from originally-planned	
China	-	10,532,219	-61%
Hong Kong SAR of China (CN)	-	2,363,320	-36%
Republic of Korea	-	1,717,147	-19%
Japan	-	1,592,429	-15%
Thailand	-	1,452,478	-15%
Taiwan, Province of China (CN)	-	1,446,686	-23%
Singapore	-	807,608	-12%
Viet Nam	-	731,936	-16%
Macao SAR of China (CN)	-	721,489	-64%
Philippines	-	646,104	-18%
United States	-	620,296	-3%
Malaysia	-	448,172	-8%
Indonesia	-	426,102	-10%
Russian Federation	-	317,890	-5%
Cambodia	-	307,968	-4%
Turkey	-	277,868	-21%
Italy	-	268,846	-3%
United Arab Emirates	-	253,548	-2%
Australia	-	241,284	-5%
United Kingdom	-	188,864	-1%
Iran Islamic Republic of	-	169,782	-18%
France	-	157,998	-1%
Myanmar	-	147,487	-21%
Germany	-	145,561	-1%
India	-	116,823	-2%
Morocco	-	108,186	-5%
Qatar	-	99,338	-2%
Canada	-	96,231	-1%
Lao People's Democratic Republic	-	71,910	-21%
Finland	-	71,413	-4%
World total	**-**	**27,848,643**	**-8%**

February 2020	excluding from/to China, Iran, Italy and Korea		
Country/Territory		Capacity change from originally-planned	
Turkey	-	198,068	-3%
Singapore	-	167,046	-3%
Russian Federation	-	163,237	-3%
Malaysia	-	121,931	-3%
Indonesia	-	116,273	-3%
Morocco	-	85,922	-4%
United Kingdom	-	83,417	0%
France	-	68,186	-1%
Iraq	-	67,359	-9%
Thailand	-	64,123	-1%
Viet Nam	-	60,708	-3%
United States	-	52,419	0%
Lebanon	-	51,639	-7%
Libya	-	50,977	-27%
Qatar	-	39,735	-1%
Tunisia	-	35,473	-5%
Saudi Arabia	-	30,901	-1%
Czechia	-	28,105	-2%
Puerto Rico (US)	-	26,854	-2%
Cambodia	-	26,018	-4%
Finland	-	23,399	-1%
Jordan	-	22,697	-3%
South Africa	-	21,734	-2%
Romania	-	20,729	-1%
Denmark	-	19,692	-1%
Algeria	-	19,020	-2%
Israel	-	18,776	-1%
Greece	-	16,930	-1%
Poland	-	16,860	-1%
Uzbekistan	-	16,113	-4%
World total	**-**	**1,758,542**	**-1%**

In February 2020, international passenger capacity **reduced by 8%**, mainly related to traffic from/to States experiencing an early outbreak and countries deeply interconnected to China.

State/Territory with 100 to 999 confirmed cases*

State/Territory with 1,000 to 9,999 confirmed cases*

State/Territory with 10,000 to 49,999 confirmed cases*

State/Territory with 50,000 or more confirmed cases*

*: Coronavirus Disease 2019 (COVID-19) Situation Report by WHO (29 February 2020)

Source: OAG scheduled data adjusted by ICAO estimates

ICAO UNITING AVIATION

COVID-19 Pandemic was declared and accelerating in March 2020

March 2020	International passenger seat capacity		
Country/Territory		Capacity change from originally-planned	
China	-	14,734,300	-82%
Italy	-	6,852,300	-60%
Republic of Korea	-	6,511,100	-70%
Japan	-	5,686,700	-50%
Germany	-	5,331,200	-28%
Hong Kong SAR of China (CN)	-	5,305,300	-76%
United Kingdom	-	4,617,500	-18%
United States	-	4,451,400	-45%
Thailand	-	4,261,200	-19%
Taiwan, Province of China (CN)	-	4,026,700	-62%
Spain	-	3,289,600	-23%
United Arab Emirates	-	3,172,100	-43%
Singapore	-	3,106,000	-24%
France	-	2,839,300	-22%
Turkey	-	2,769,000	-34%
Viet Nam	-	2,564,200	-55%
Malaysia	-	2,424,100	-41%
India	-	1,926,300	-27%
Saudi Arabia	-	1,734,900	-31%
Switzerland	-	1,626,200	-44%
Philippines	-	1,567,900	-26%
Indonesia	-	1,402,000	-32%
Netherlands	-	1,125,900	-15%
Canada	-	1,119,300	-28%
Austria	-	1,081,500	-18%
Russian Federation	-	1,058,200	-23%
Australia	-	1,027,200	-14%
Portugal	-	1,000,500	-29%
Belgium	-	968,400	-20%
Qatar	-	948,100	-22%
World total	-	**128,121,250**	**-33%**

March 2020 excluding from/to China, Iran, Italy and Korea			
Country/Territory		Capacity change from originally-planned	
Germany	-	4,710,781	-28%
United Kingdom	-	4,084,431	-20%
United States	-	3,521,657	-15%
Spain	-	3,099,403	-24%
United Arab Emirates	-	2,750,347	-23%
France	-	2,479,599	-22%
Turkey	-	2,358,866	-32%
Singapore	-	2,142,201	-37%
Thailand	-	1,838,257	-30%
India	-	1,790,906	-26%
Saudi Arabia	-	1,724,927	-31%
Malaysia	-	1,597,372	-34%
Switzerland	-	1,502,847	-26%
Netherlands	-	1,051,113	-16%
Indonesia	-	1,045,548	-29%
Austria	-	1,045,431	-28%
Japan	-	1,035,369	-23%
Portugal	-	983,469	-24%
Canada	-	956,400	-13%
Denmark	-	876,192	-27%
Poland	-	850,737	-23%
Belgium	-	840,973	-28%
Israel	-	812,842	-40%
Qatar	-	787,304	-18%
Viet Nam	-	784,206	-35%
Sweden	-	727,937	-24%
Egypt	-	720,015	-26%
Russian Federation	-	719,641	-14%
Morocco	-	674,209	-30%
Australia	-	674,096	-18%
World total	-	**64,184,832**	**-22%**

In March 2020, COVID-19 and its impacts have gone global. International passenger capacity so far **reduced by 33%**, with significant reduction not only in States experiencing an early outbreak but also at the worldwide scale.

State/Territory with 100 to 999 confirmed cases*

State/Territory with 1,000 to 9,999 confirmed cases*

State/Territory with 10,000 to 49,999 confirmed cases*

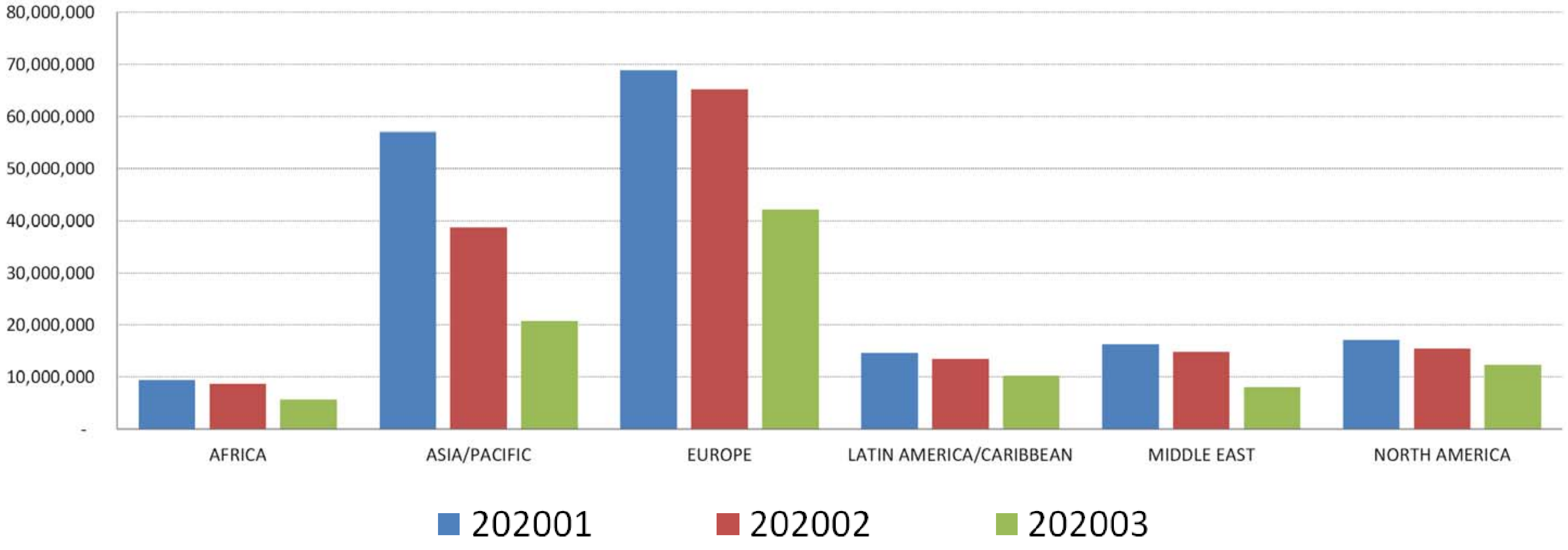
State/Territory with 50,000 or more confirmed cases*

*: Coronavirus Disease 2019 (COVID-19) Situation Report by WHO (29 March 2020)

Source: OAG scheduled data adjusted by ICAO estimates

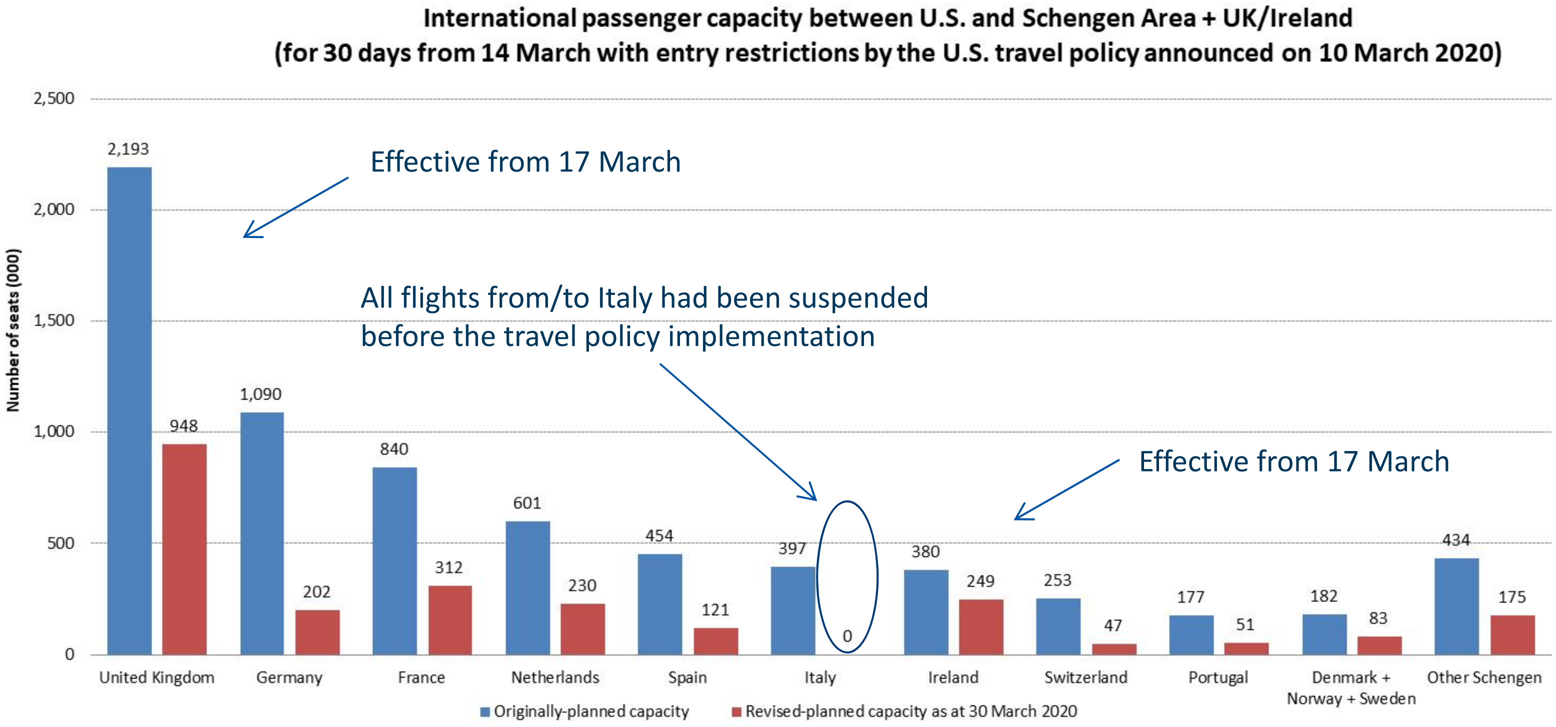
Air traffic reduction no longer limited to initial outbreak countries

Seat capacity by region (international passenger traffic)



Source: ICAO ADS-B operation data

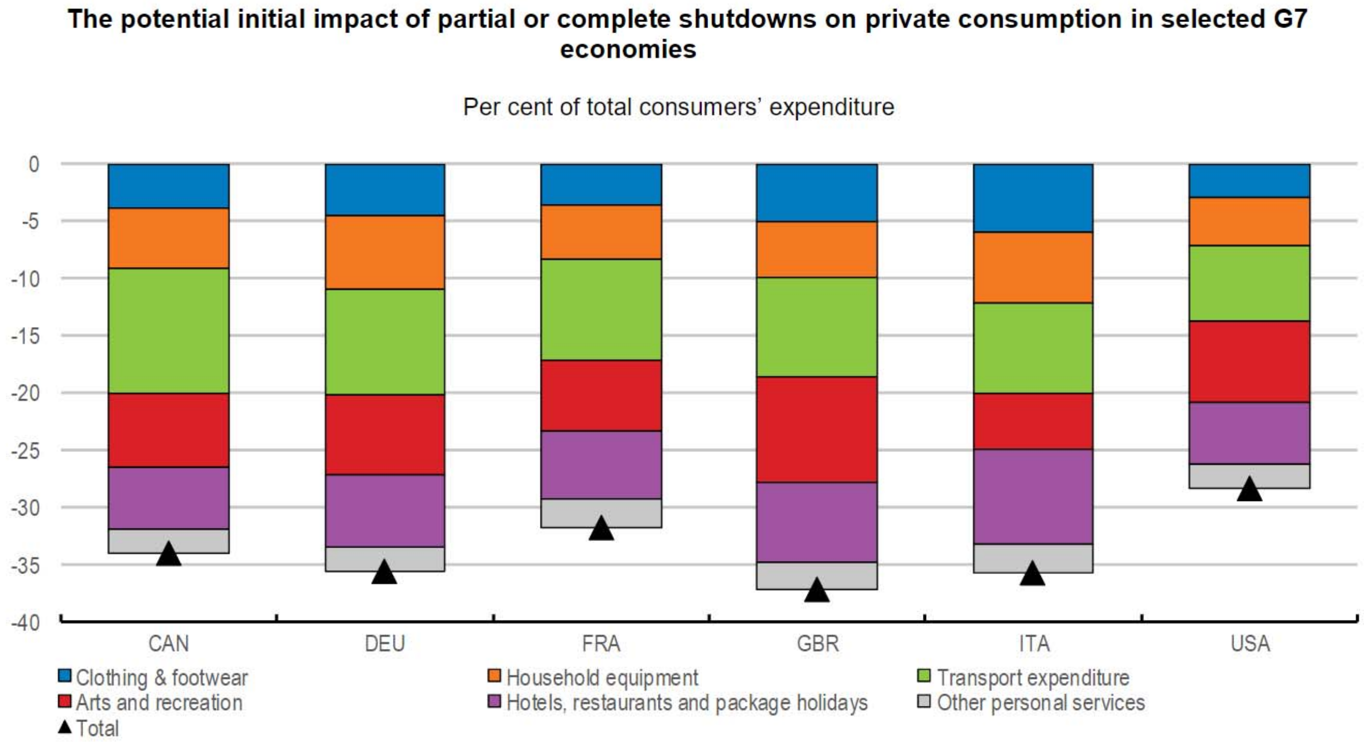
Drastic reduction in air traffic amplified by travel restrictions amid COVID-19 outbreak



As of 30 March 2020, **65%** capacity reduction so far since the announcement of U.S. travel policy, affecting a maximum of approx. **5.5 million passengers** for one month if all the flights were suspended

Source: OAG Scheduled data and ICAO estimates using ICAO-ICM MIDT data

Sharp decrease in consumers' expenditures for air travel due to containment measures



Source: OECD Evaluating the Initial Impact of Containment Measures (27 March 2020)

Global Level Analysis

Figures and estimates herein is preliminary and subject to substantial changes.
The analysis will be updated with the situation evolving and more information available.

COVID-19 impact scenarios: Indicative V- and U-shaped paths

Three scenarios to measure the possible impact of COVID-19 outbreak on scheduled **international passenger** traffic worldwide for **first half of the year 2020 (1Q and 2Q 2020)**:

- **Baseline:** hypothetical situation without COVID-19 outbreak, i.e. originally-planned
- **Scenario 1:** V-shaped path, quick recovery from May 2020
- **Scenario 2:** U-shaped path, prolonged contraction to June 2020

Assumptions used for each scenario are summarized in **Appendix**

- Given a rapidly changing environment, Scenarios 1 and 2 are merely indicative of two possible paths out of many. The exact path will depend upon various factors, inter alia, duration and magnitude of the outbreak and containment measures, availability of government assistance, consumers' confidence, and economic conditions.
- Scenarios 1 and 2 are differentiated in terms of **supply (output)** and **demand (spending)** conditions, mainly, a) the timing and scale of airline capacity decline and recovery, and b) the degree of consumers' confidence for air travel that can be translated into demand or load factor.

Impact on International Passenger Traffic

The preliminary estimates indicate the impact in terms of **scheduled international passenger traffic during first half 2020** compared **to Baseline (originally-planned)**:

Scenario 1 (V-shaped path)

- Overall reduction of **37% of seats offered by airlines**
- Overall reduction of **411 million passengers**
- Approx. **USD 90 billion potential loss** of gross operating revenues of airlines

Scenario 2 (U-shaped path)

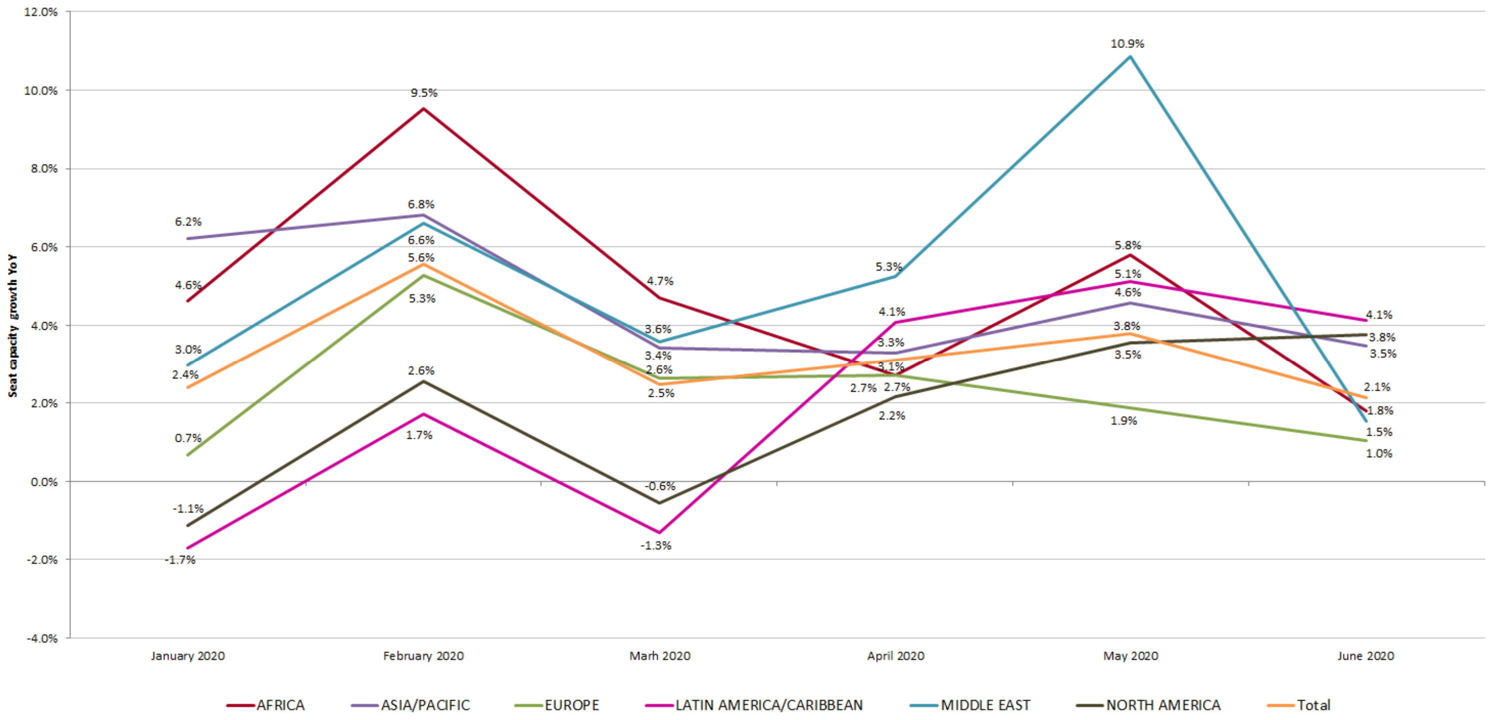
- Overall reduction of **48% of seats offered by airlines**
- Overall reduction of **535 million passengers**
- Approx. **USD 118 billion potential loss** of gross operating revenues of airlines

Biggest overall impact in Europe and Asia/Pacific, followed by North America and Middle East

	Scenario 1 (V-shaped) compared to Baseline (originally-planned) for first half 2020			**Scenario 2 (U-shaped)** compared to Baseline (originally-planned) for first half 2020		
Region	Seat Capacity (%)	Passenger number (million)	Gross passenger revenue (USD, billion)	Seat Capacity (%)	Passenger number (million)	Gross passenger revenue (USD, billion)
AFRICA	-26.9%	-13.24	-4.61	-37.2%	-18.48	-6.43
ASIA/PACIFIC	-42.9%	-132.33	-31.02	-52.3%	-162.67	-38.26
EUROPE	-38.5%	-186.74	-32.40	-50.2%	-245.73	-42.75
LATIN AMERICA/CARIBBEAN	-24.0%	-19.85	-4.47	-33.6%	-28.48	-6.41
MIDDLE EAST	-30.5%	-27.93	-7.86	-40.5%	-37.96	-10.72
NORTH AMERICA	-31.8%	-30.92	-9.94	-42.5%	-42.16	-13.55
Total	**-37.0%**	**-411.01**	**-90.30**	**-47.6%**	**-535.48**	**-118.14**

Source: ICAO estimates

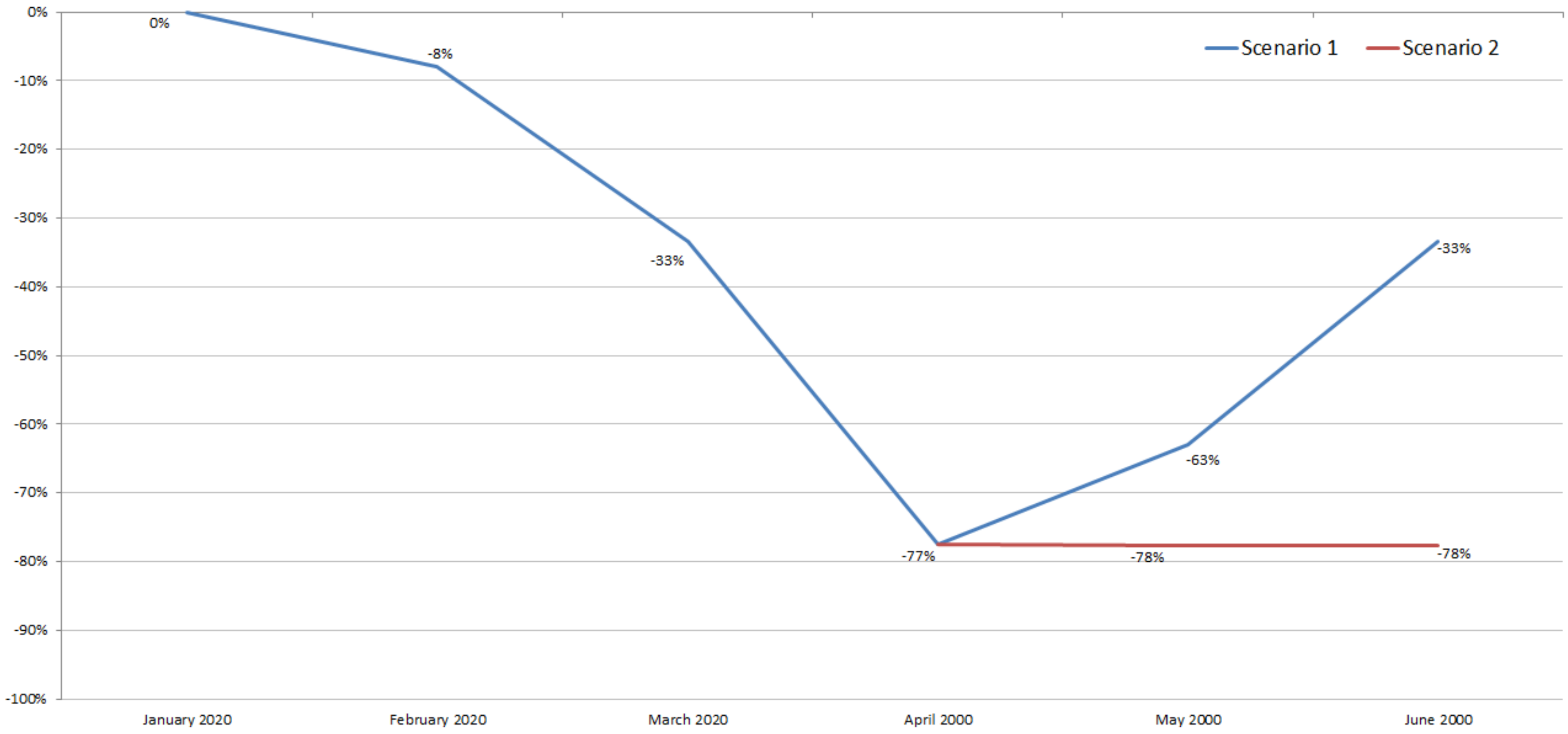
Baseline: 3% seat capacity increase (year-on-year) globally for first half 2020



A total of YoY 3.2% seat capacity increase originally - planned for 1Q 2020 (scheduled international passenger set number)

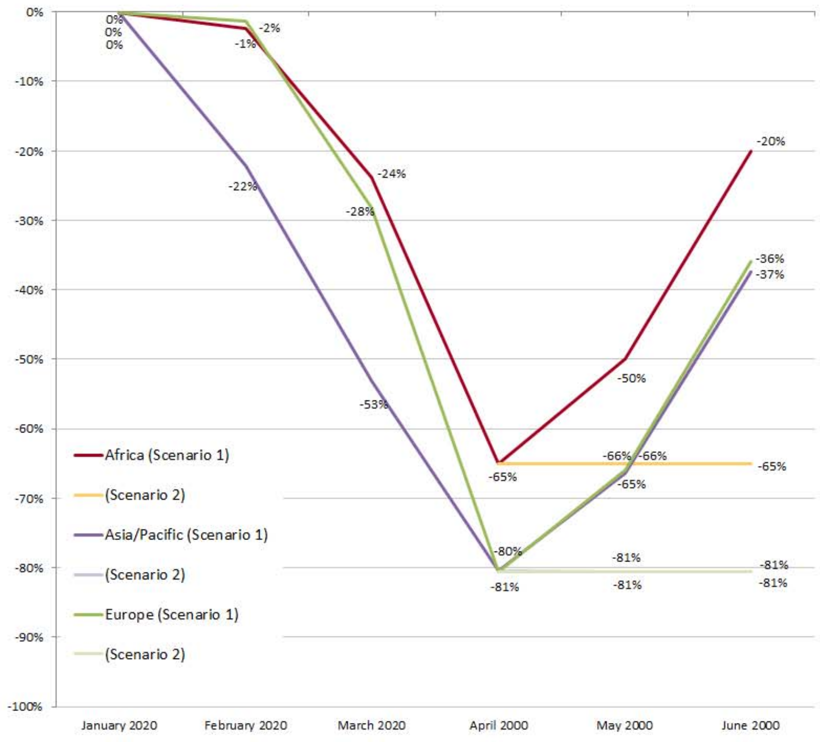
ICAO UNITING AVIATION

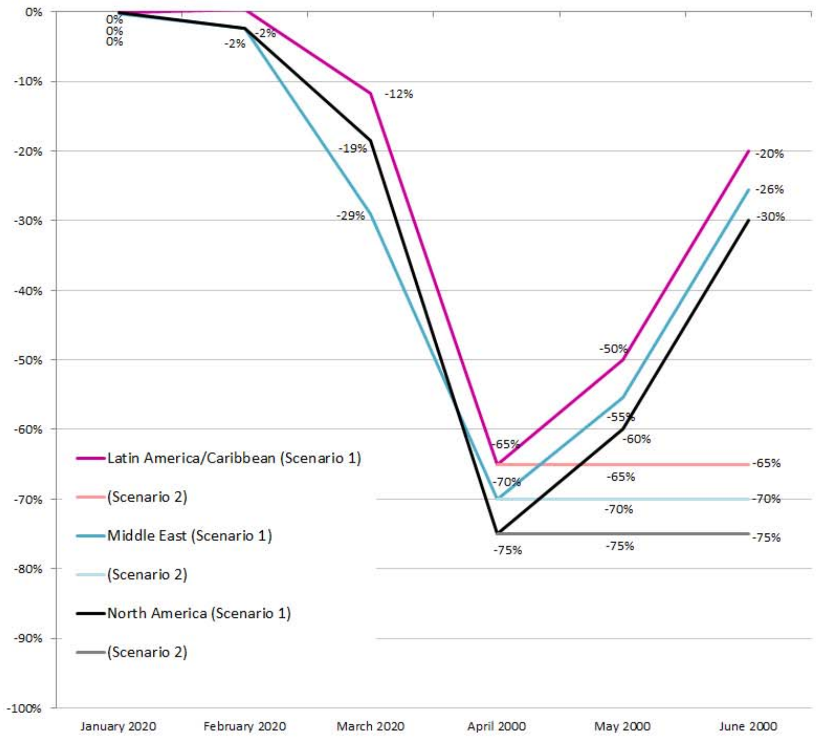
Scenarios 1 & 2 show 37 to 48 % seat capacity reduction in first half 2020 from Baseline



Source: ICAO estimates based on OAG, Routes Online and airline websites

Break-down of seat capacity by region

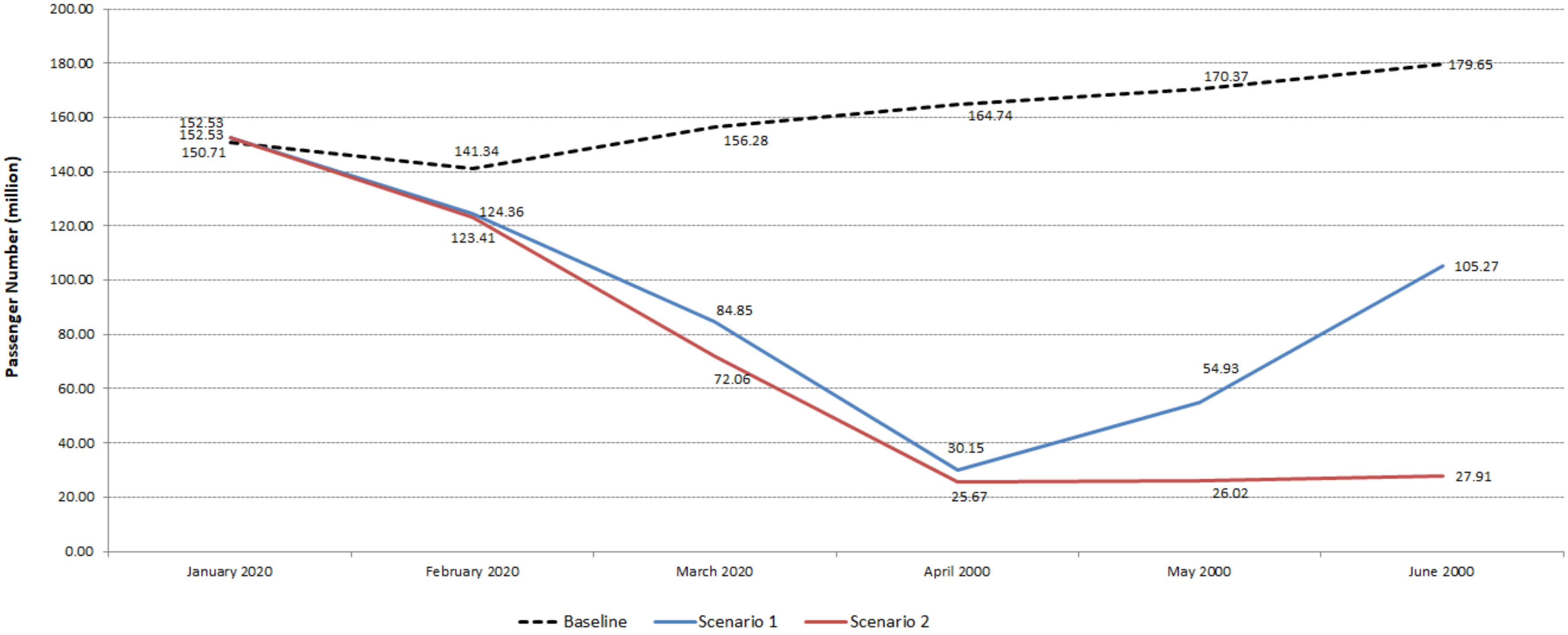




Source: ICAO estimates based on OAG, Routes Online and airline websites

ICAO UNITING AVIATION

A total of 411 to 535 million passenger reduction in first half 2020 compared to Baseline

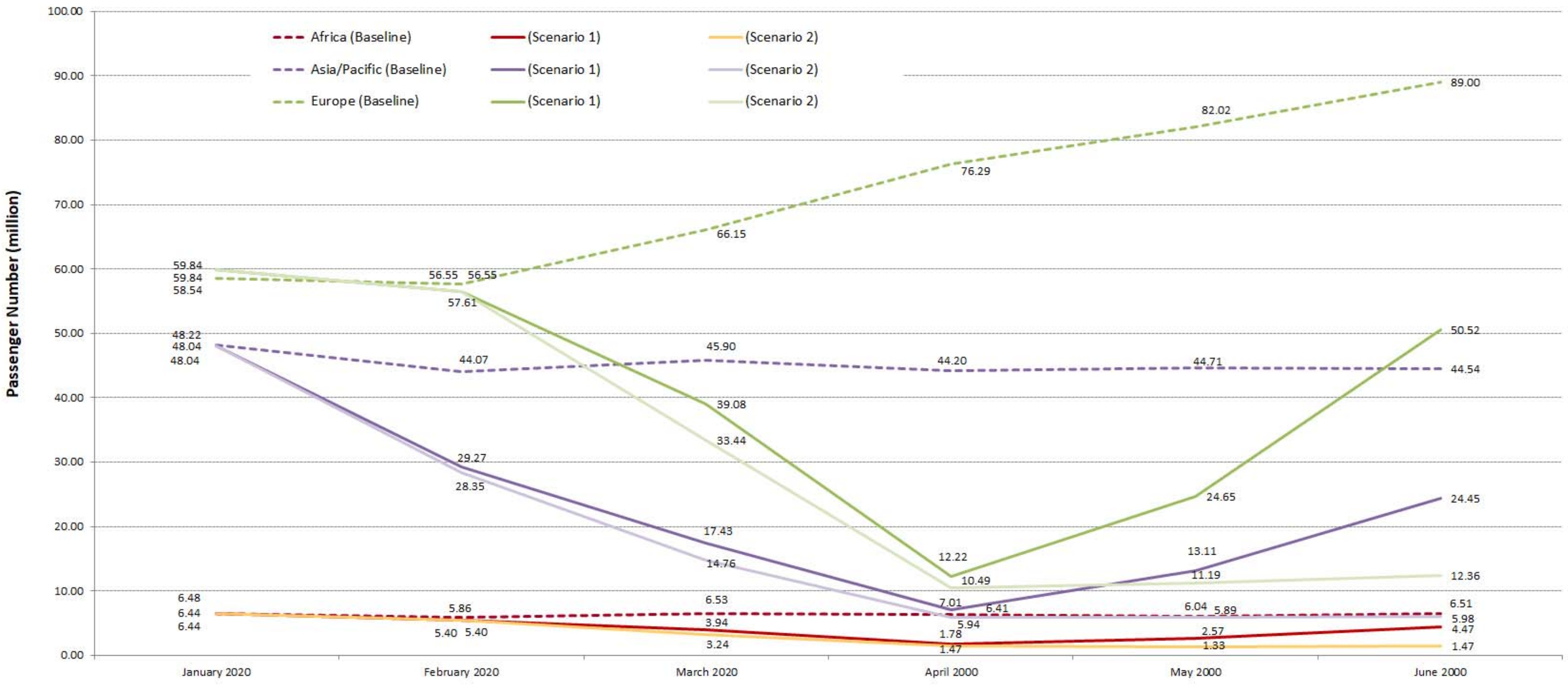


Note: Number of international passengers departing from each country and territory, which are aggregated at the regional level to avoid double counting

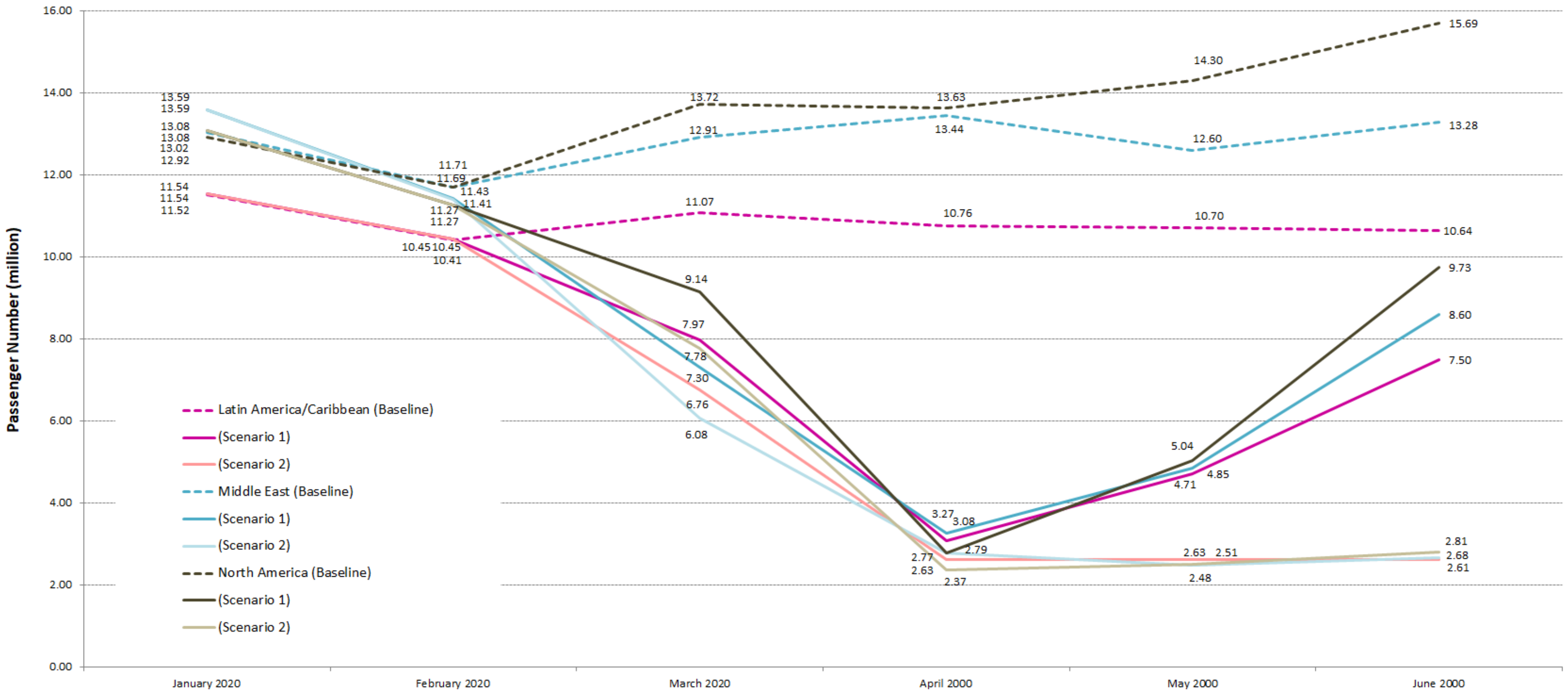
Source: ICAO estimates

ICAO UNITING AVIATION

Break-down of passenger number by region (1)

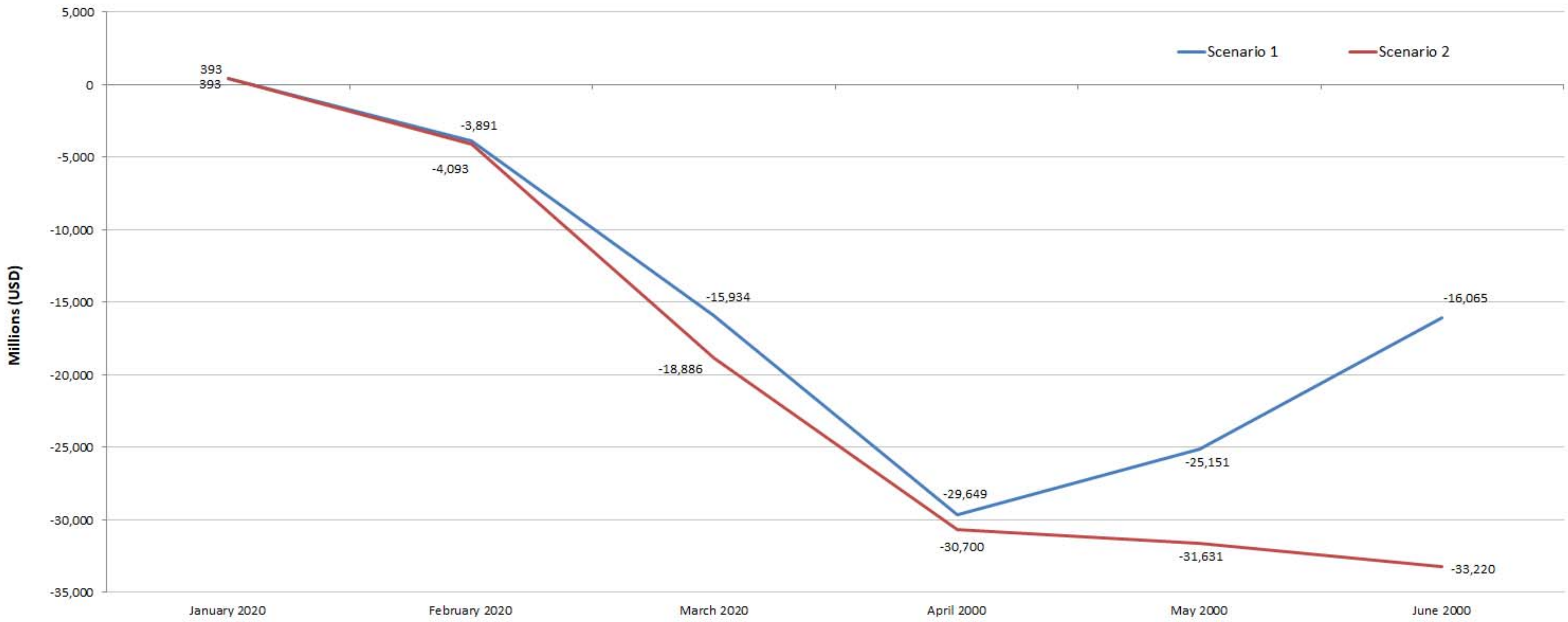


Break-down of passenger number by region (2)



ICAO UNITING AVIATION

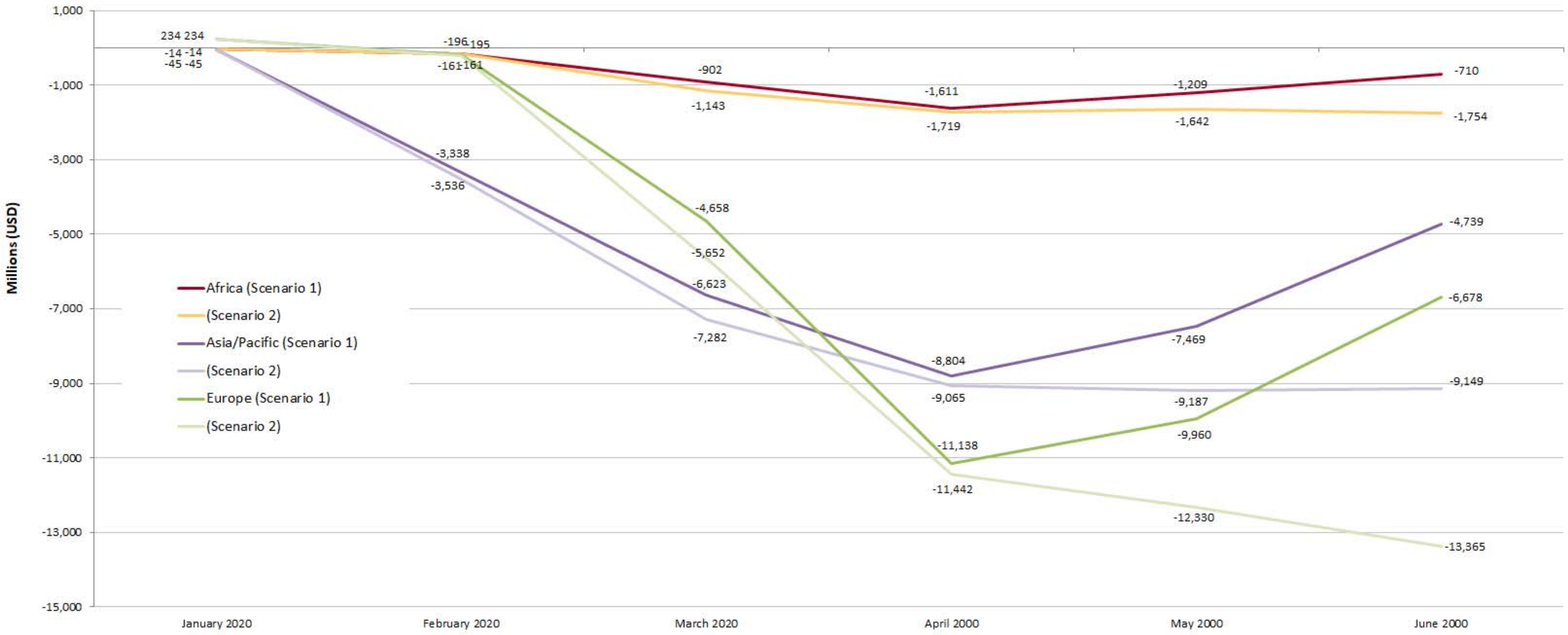
Approx. USD 90 to 118 billion loss of airline revenues in first half 2020 compared to Baseline



Note: The above revenues are gross passenger operating revenues of all airlines serving international routes from each country and territory, which are aggregated at the regional level (revenues of international routes to each country and territory were removed to avoid double counting.

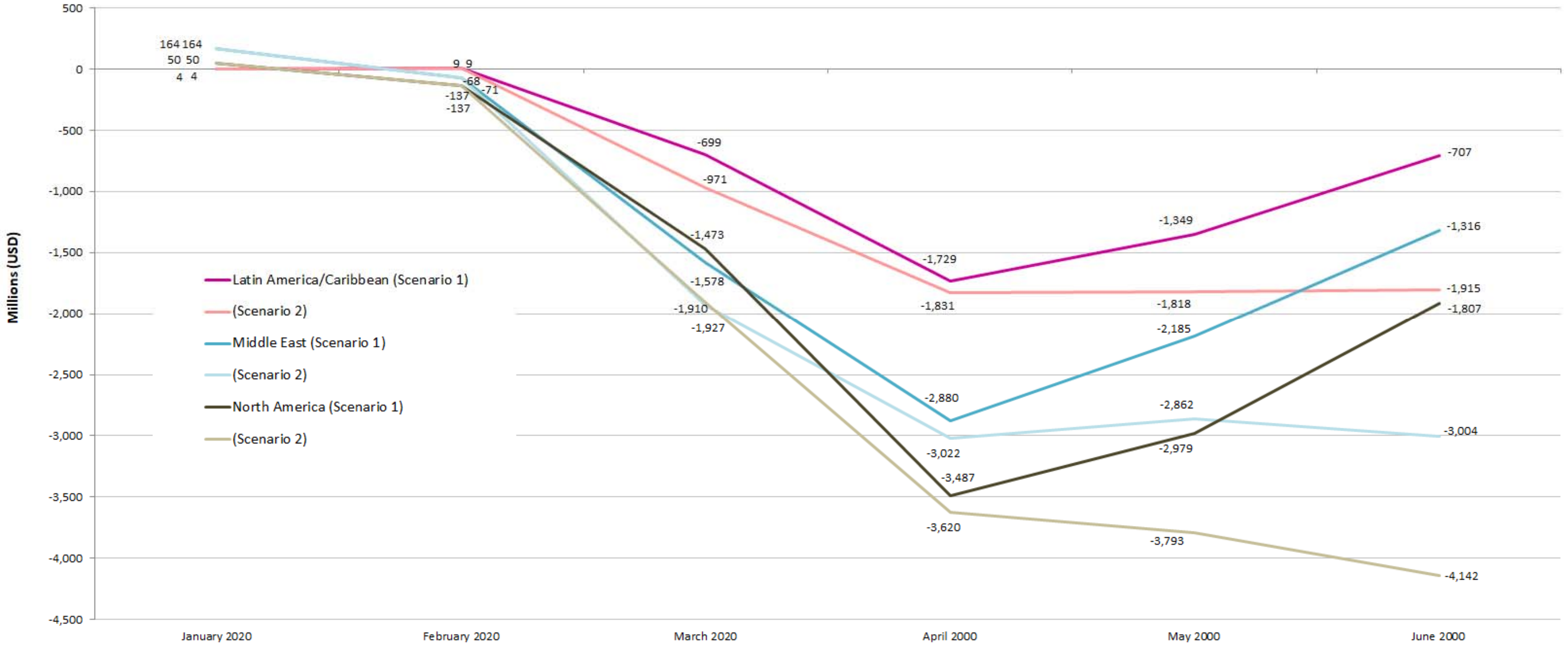
Source: ICAO estimates

Break-down of revenue reduction by region (1)



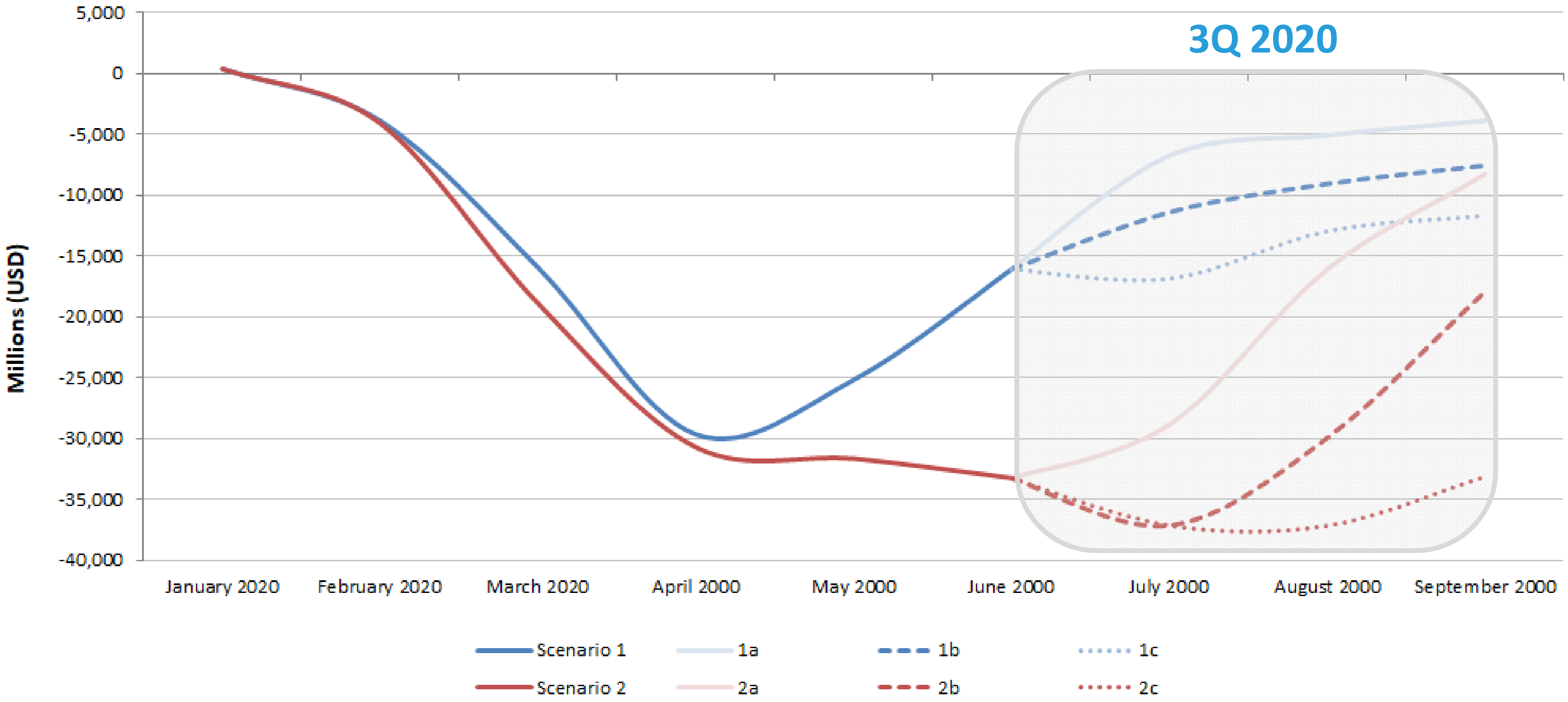
Source: ICAO estimates

Break-down of revenue reduction by region (2)



ICAO UNITING AVIATION

Possible paths for 3Q 2020 although recovery prospects are still very uncertain



Source: ICAO estimates

If Scenario 2 contraction continues to 3Q 2020, over USD 35 billion would be lost every month

The exact path (depth, length and shape) depends on various factors, inter alia, duration and magnitude of the outbreak and containment measures, availability of government assistance, consumers' confidence, and economic conditions.

Scenario	Gross passenger revenue (USD, billion)		Description
	from Jul to Sep (3Q 2020)	Total from Jan to Sep (1Q to 3Q 2020)	
1a	-15.68	**-105.98**	Strong rebound of capacity growth but no full return of consumers' confidence in travel during 3Q 2020
1b	-28.00	**-118.30**	Deceleration of capacity recovery without full return of consumers' confidence in travel during 3Q 2020
1c	-41.47	**-131.77**	A minor dip in July 2020, followed by slow progression of capacity recovery and return of consumers' confidence in travel
2a	-53.15	**-171.28**	Quick recovery from July 2020 by following the recovery path similar to but even faster than 2Q 2020 of Scenario 1 because of summer season
2b	-84.95	**-203.09**	Downtown (lock-down) continuing to July 2020 but quick recovery starting from August 2020 by following the path similar to 2Q 2020 of Scenario 1
2c	-107.40	**-225.54**	Downtown (lock-down) continuing to September 2020, i.e. the same situation as 2Q 2020 and hitting summer travel peak season, especially in Europe and North America

Source: ICAO estimates

Comparison with full year estimates by IATA: 3-month lock-down scenario

The analytical difference between ICAO and IATA estimates:

- **Period**: first half 2020 (ICAO) and full year 2020 (IATA)
- **Traffic**: international only (ICAO) and both international and domestic (IATA)
- **Regional break-down**: by all traffic from/to States in each region (ICAO) and region of airline registration (IATA)
- **Baseline**: originally-planned i.e. 2020 business as usual scenario (ICAO) and 2019 level with 2020 airline schedules (IATA)

Region of airline registration	**Revenue Passenger Kilometres (RPKs)** - both interntional and domestic for full year 2020	**Gross passenger revenue** - both interntional and domestic for full year 2020
	year-on-year % change from 2019 level	USD billion, compared to 2019 level
AFRICA	-32%	-4
ASIA/PACIFIC	-37%	-88
EUROPE	-46%	-76
LATIN AMERICA/CARIBBEAN	-41%	-15
MIDDLE EAST	-39%	-19
NORTH AMERICA	-27%	-50
Total	**-38%**	**-252**

https://www.iata.org/en/publications/economics/

Source: IATA COVID-19 Updated Impact Assessment (dated 24 March 2020)

Impacts on Airports and Tourism

Figures and estimates herein are quoted from the analyses of the Airport Council International (ACI) and the World Tourism Organization (UNWTO).

Airport may lose approx. USD 76 billion for full year 2020 (estimated by ACI)

Region	**Passenger number** - both interntional and domestic for full year 2020		**Airport revenue** - both aeronautical and non-aeronautical for full year 2020	
	million and % change from 2020 "business as usual" baseline scenario		USD billion and % change from 2020 "business as usual" baseline scenario	
AFRICA	-77	-32.5%	-1.5	-35%
ASIA/PACIFIC	-1,465	-42.1%	-23.9	-48%
EUROPE	-894	-35.0%	-24.6	-42%
LATIN AMERICA/CARIBBEAN	-244	-34.0%	-4.0	-38%
MIDDLE EAST	-157	-36.5%	-5.7	-43%
NORTH AMERICA	-790	-37.7%	-16.9	-49%
Total	**-3,627**	**-38.1%**	**-76.6**	**-45%**

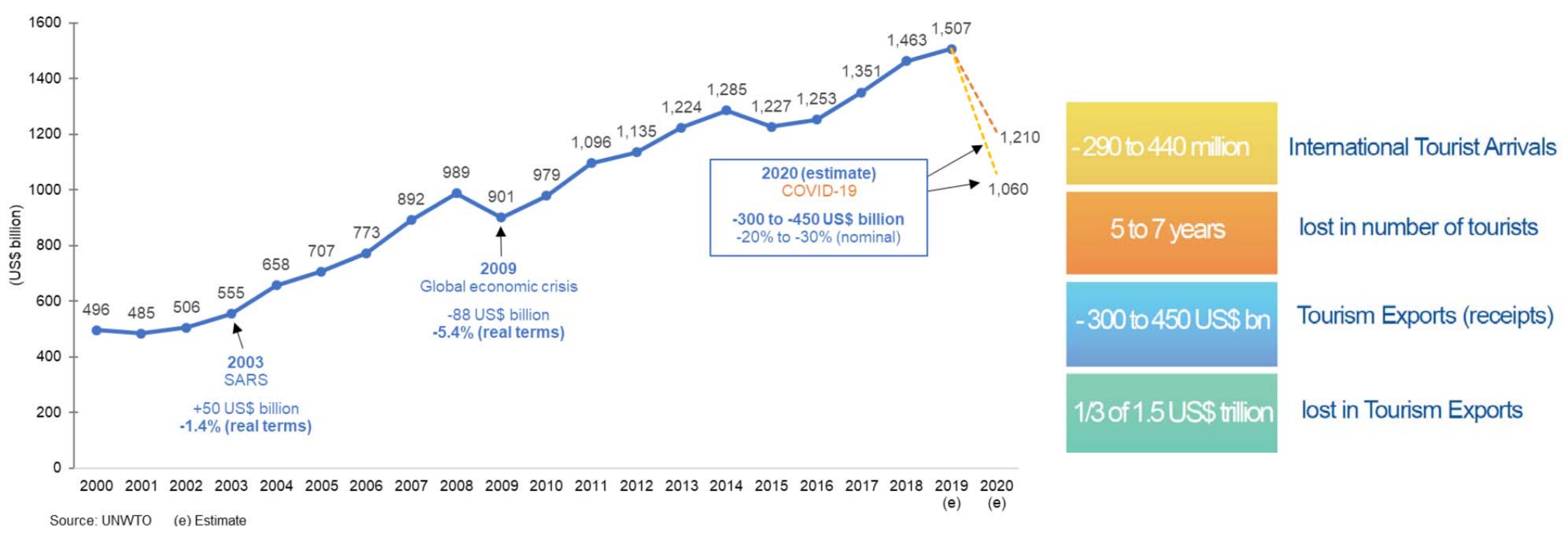
https://aci.aero/about-aci/priorities/health/covid-19/

Source: The Impact of COVID-19 on the Airport Business (dated 1 April 2020)

A loss of USD 300 to 450 billion in international tourism receipts for 2020 (estimated by UNWTO)

ICAO UNITING AVIATION

2020 forecast - international tourism receipts, world (US$ billion)



https://www.unwto.org/news/international-tourism-arrivals-could-fall-in-2020

State Level Scenario Analysis

Figures and estimates herein will be updated with the situation evolving and more information available.

ICAO UNITING AVIATION

Estimated impact on 4 States with the highest number of confirmed cases*

Three scenarios to measure the possible impact of COVID-19 outbreak at State level:

- ❑ **Baseline:** hypothetical situation without COVID-19 outbreak, i.e. originally-planned
- ❑ **Scenario 1:** V-shaped path, quick recovery from May 2020
- ❑ **Scenario 2:** U-shaped path, prolonged contraction to June 2020

Assumptions used for each scenario are summarized in **Appendix**

Estimated impact of COVID-19 outbreak on scheduled **international passenger** traffic **from/to** the following States during **first half 2020** compared to originally-planned:

- **China (including Hong Kong/Macao SARs and Taiwan Province)**: 57 to 66% seat capacity reduction, 86 to 99 million passenger reduction, USD 19.4 to 22.5 billion loss of gross operating revenues of airlines from/to the country
- **Republic of Korea**: 46 to 55% seat capacity reduction, 23 to 28 million passenger reduction, USD 4.7 to 5.8 billion loss of gross operating revenues of airlines from/to the country
- **Italy**: 50 to 60% seat capacity reduction, 34 to 41 million passenger reduction, USD 4.0 to 4.9 billion loss of gross operating revenues of airlines from/to the country
- **Iran (Islamic Republic of)**: 43 to 49% seat capacity reduction, 2.4 to 2.8 million passenger reduction, USD 370 to 450 million loss of gross operating revenues of airlines from/to the country

* *Coronavirus Disease 2019 (COVID-19) Situation Report* by WHO as of 15 March 2020

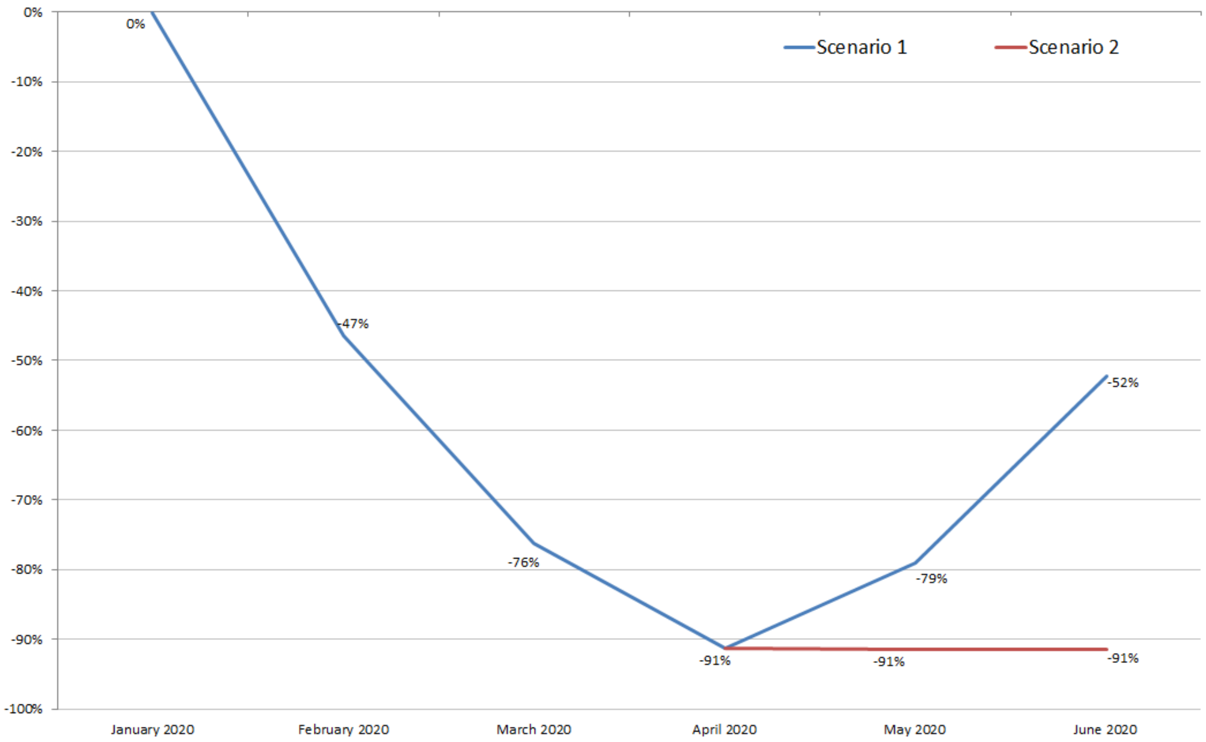
China

The estimates indicate the impact in terms of scheduled international passenger traffic from/to China (including Hong Kong SAR of China, Macao SAR of China, Taiwan, Province of China, and cross-strait services) during first half 2020 compared to originally-planned:

- Overall reduction of **57 to 66% of seats offered by airlines**
- Overall reduction of **86 to 99 million passengers**
- Approx. **USD 19.4 to 22.5 billion potential loss** of gross operating revenues of airlines

ICAO UNITING AVIATION

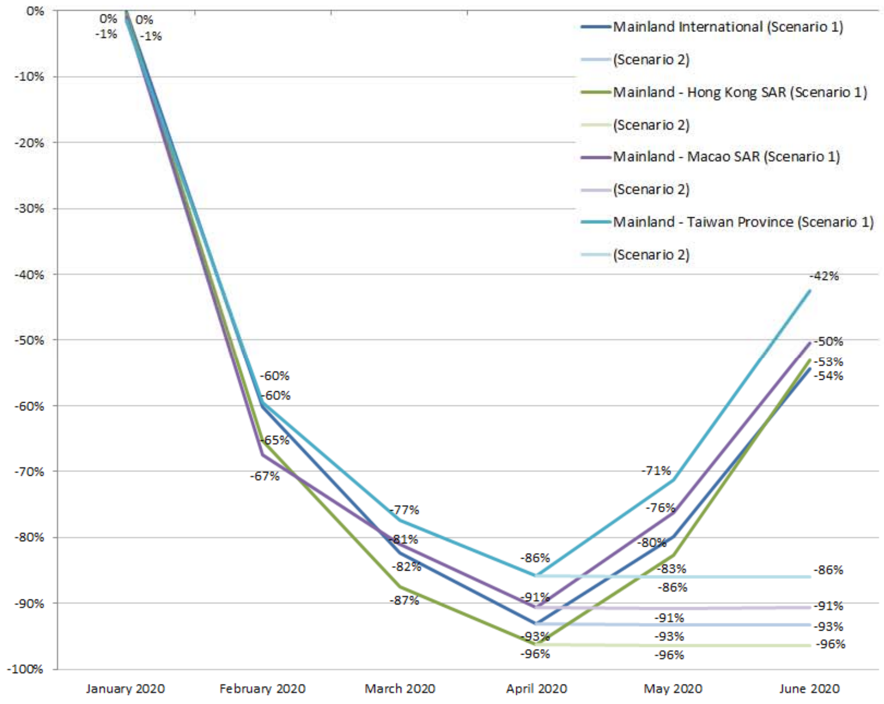
A total of 57 to 66% seat capacity reduction in first half 2020 from Baseline

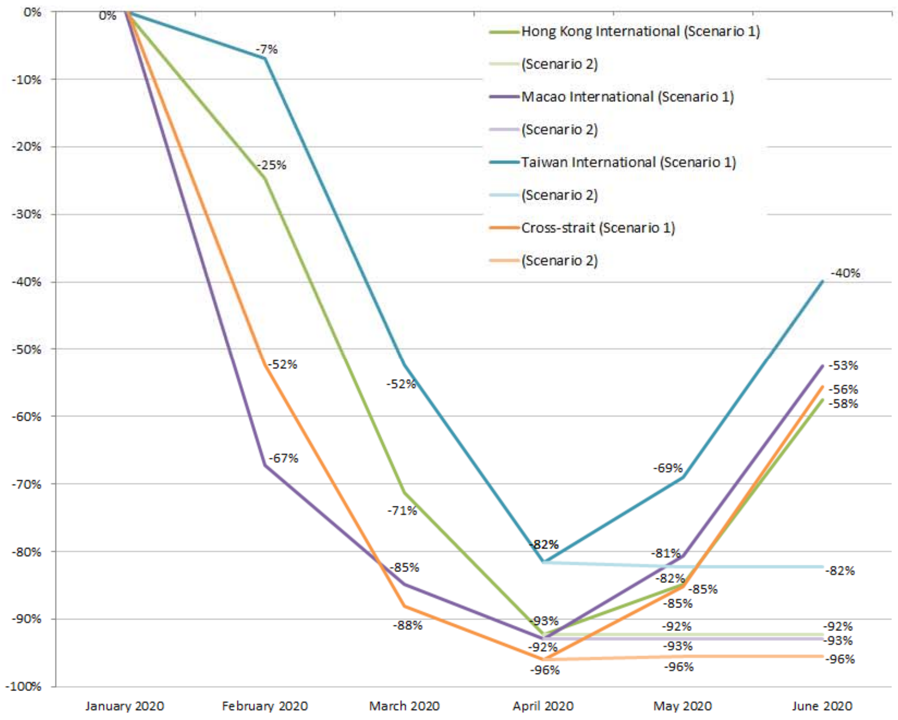


- **"Mainland International"** refers to scheduled international passenger services from/to mainland China, excluding "Regional", "Hong Kong International", "Macao International", "Taiwan International" and "Cross-Strait"
- **"Regional"** refers to scheduled passenger services between mainland China and Hong Kong SAR of China, between mainland China and Macao SAR of China, and between mainland China and Taiwan, Province of China
- **"Hong Kong International"** refers to scheduled international passenger services from/to Hong Kong Special Administrative Region (SAR) of China excluding "Regional" and "Cross-Strait"
- **"Macao International"** refers to scheduled international passenger services from/to Macao SAR of China, excluding "Regional" and "Cross-Strait"
- **"Taiwan International"** refers to scheduled international passenger services from/to Taiwan, Province of China, excluding "Regional" and "Cross-Strait"
- **"Cross-Strait"** refers to scheduled passenger services among Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China, excluding "Regional"

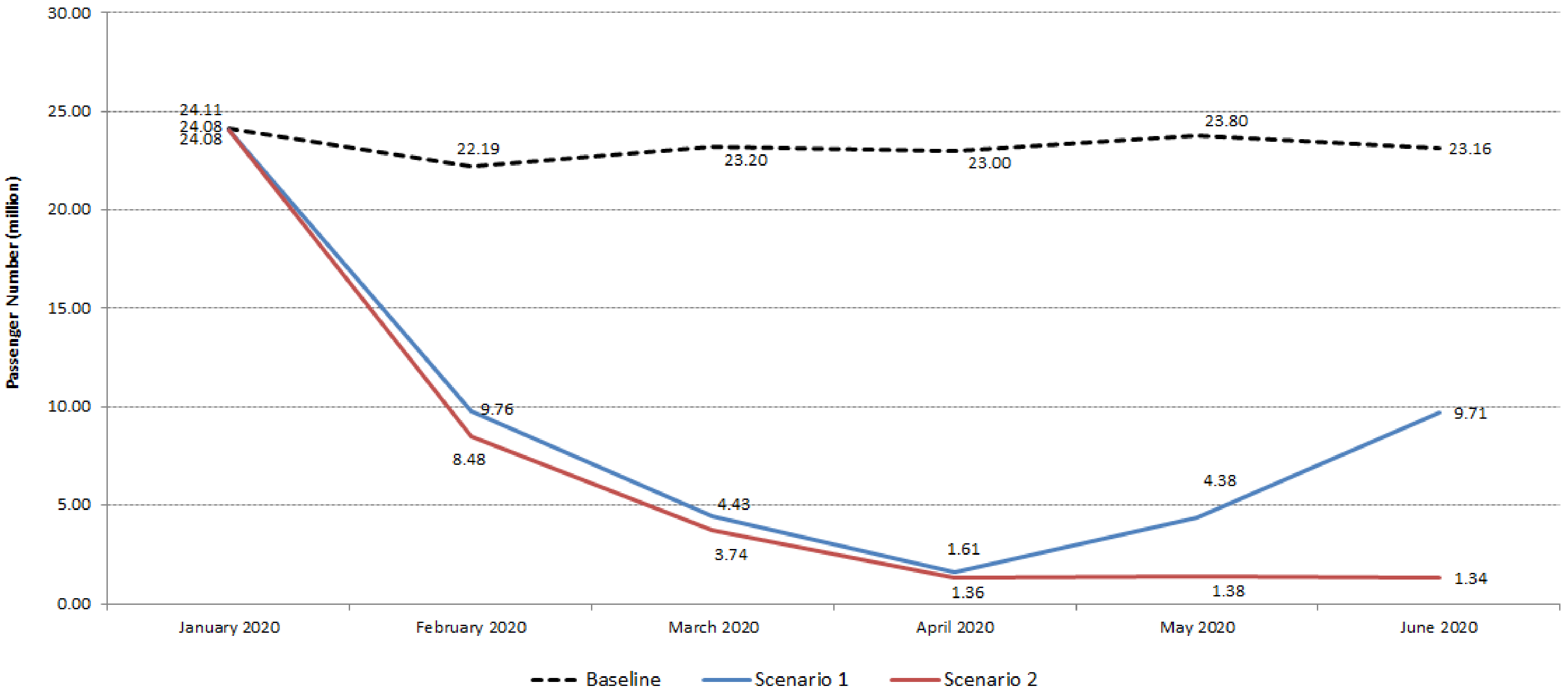
Source: ICAO estimates based on OAG, Routes Online and airline websites

Break-down of seat capacity by route



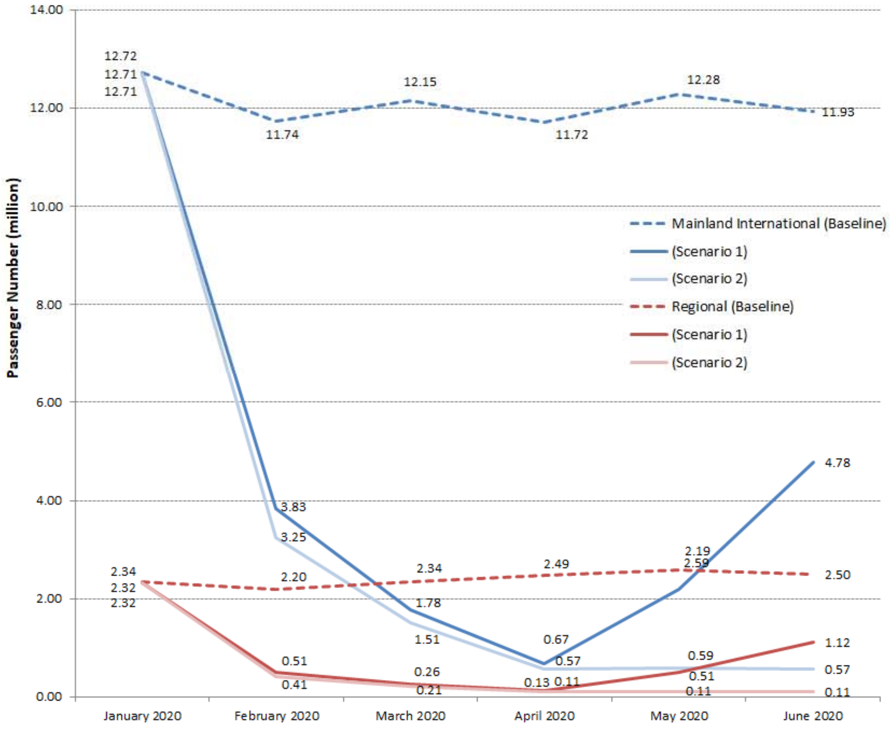


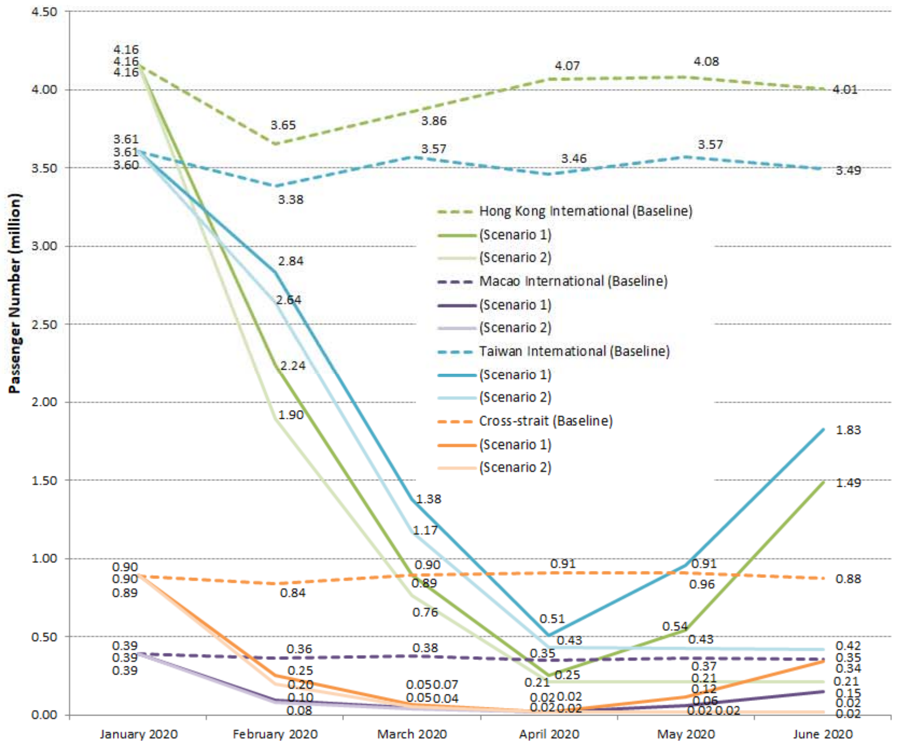
A total of 86 to 99 million passenger reduction in first half 2020 compared to Baseline



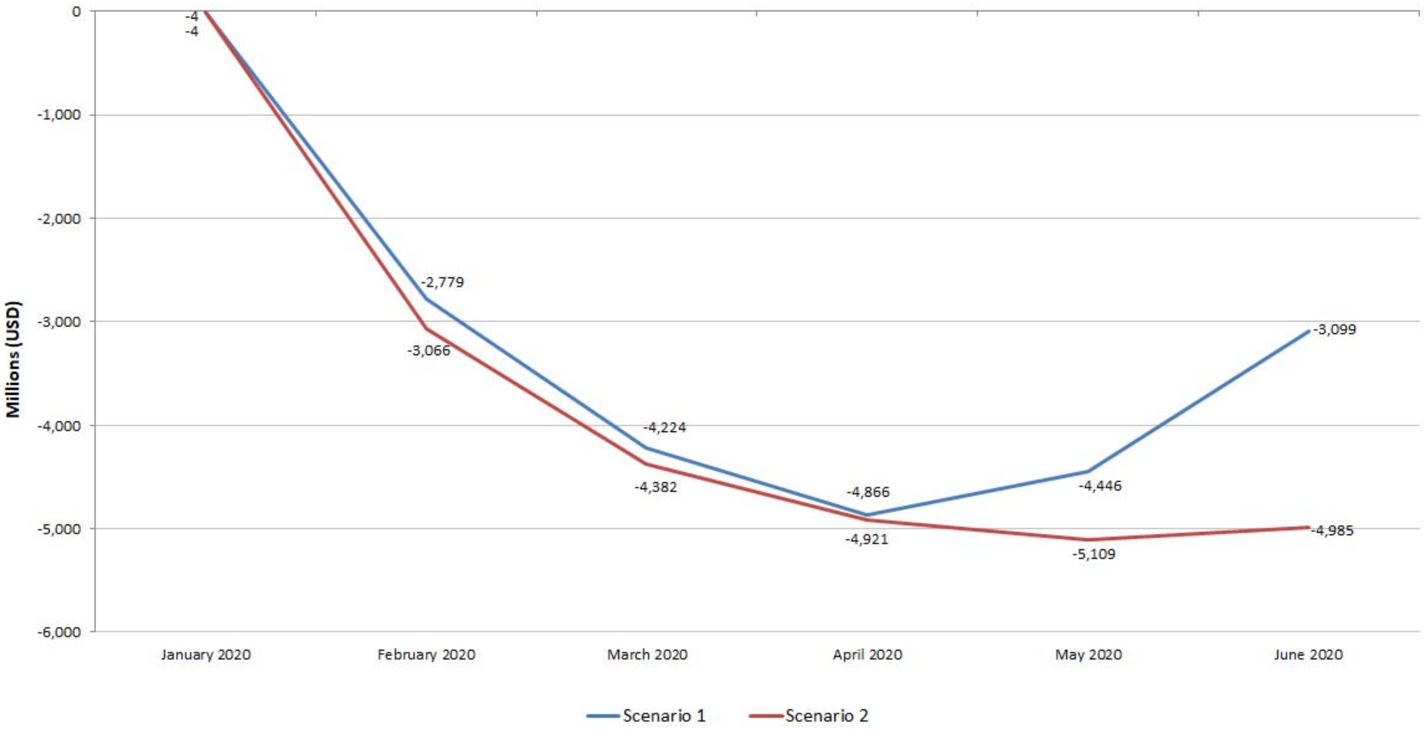
Source: ICAO estimates

Break-down of passenger number by route





Approx. USD 19.4 to 22.5 billion loss of airline revenues in first half 2020 compared to Baseline

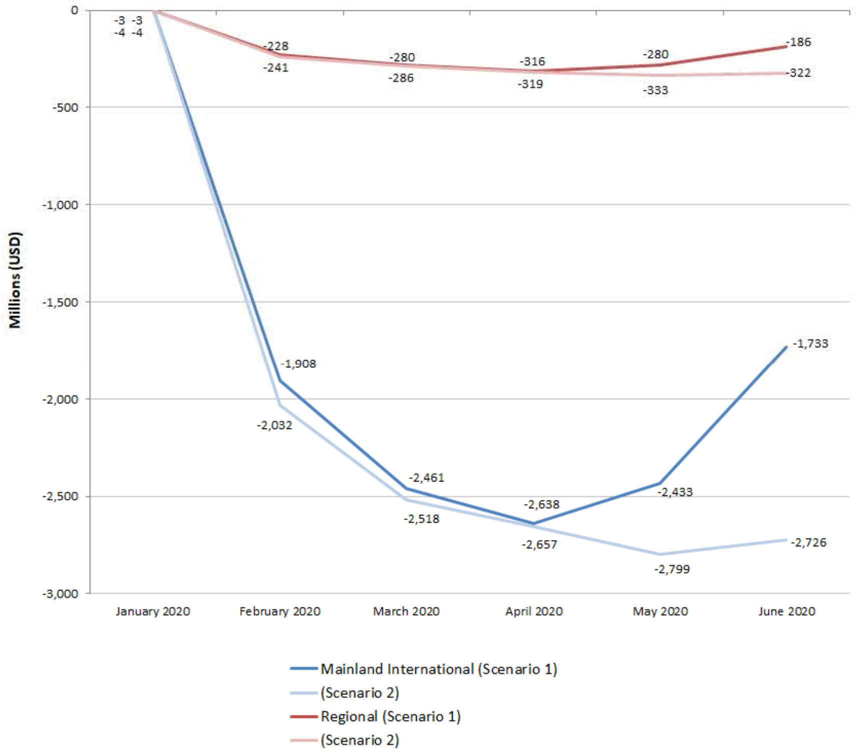


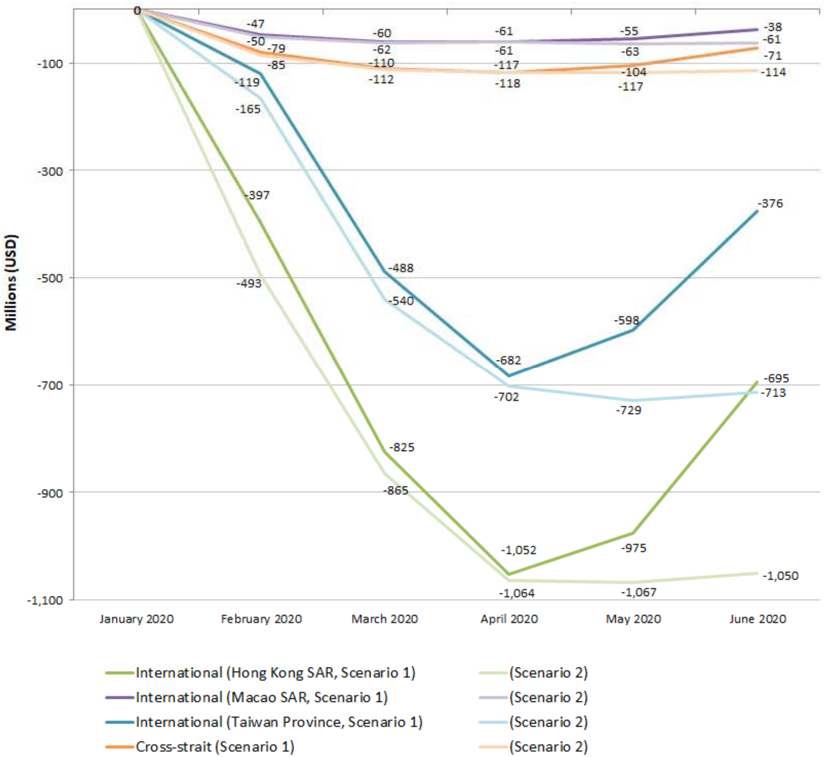
- Mainland international: calculated with an average fare of USD 250 per passenger based on traffic/financial reports of CA, CZ and MU with wide variations by destination (20% lower for LCCs);
- Regional: calculated with an average fare of USD 135 per passenger based on traffic/financial reports of CA, CZ and MU (20% lower for LCCs);
- Hong Kong and Taiwan International: calculated with an average fare of USD 287.6 per passenger with wide variations by destination (20% lower for LCCs);
- Macao International: calculated with an average fare of USD 172 per passenger (ditto);
- Cross-Strait: calculated with an average fare of USD 135 per passenger (ditto)

Source: ICAO estimates

ICAO UNITING AVIATION

Break-down of revenue reduction by route





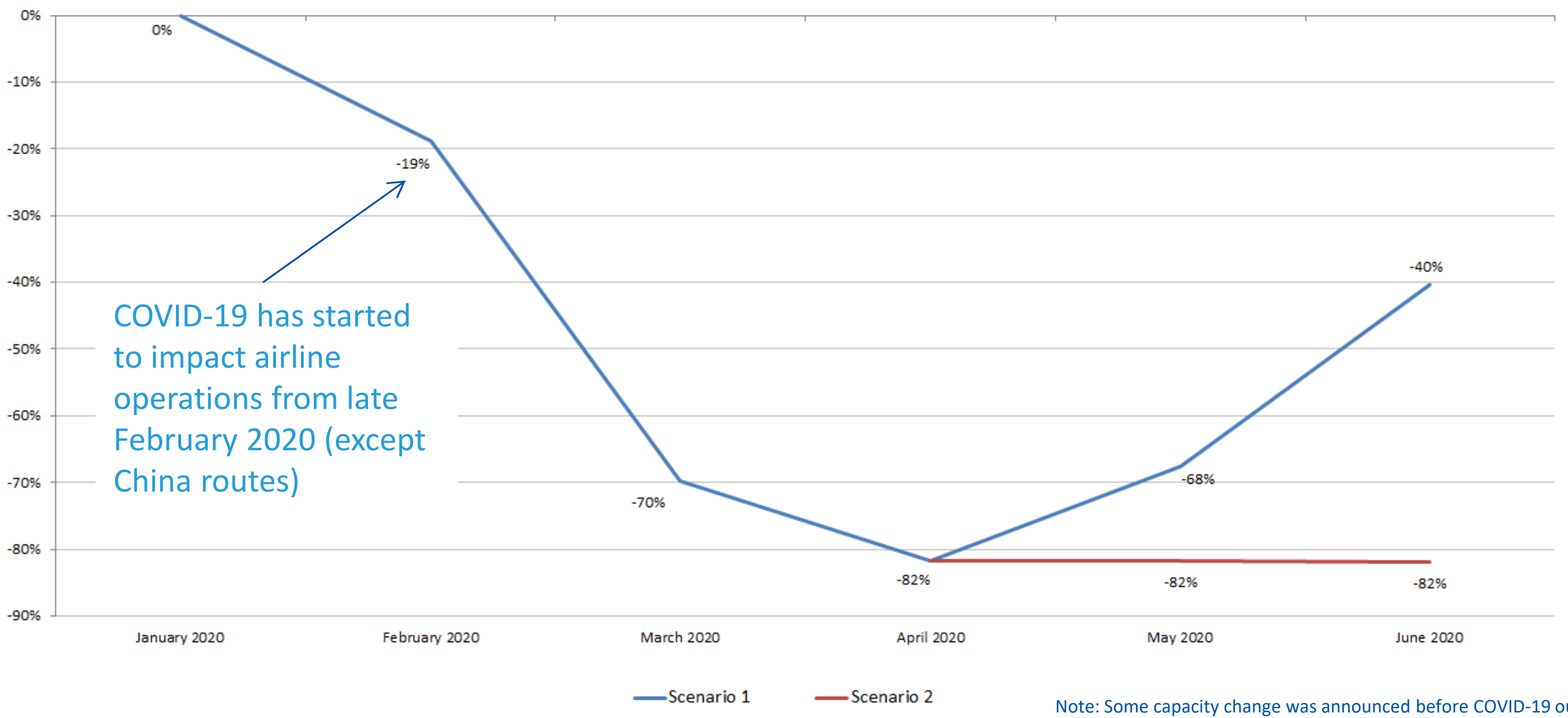
Source: ICAO estimates

Republic of Korea

The estimates indicate the impact in terms of scheduled international passenger traffic from/to Republic of Korea during first half 2020 compared to originally-planned:

- Overall reduction of **46 to 55% of seats offered by airlines**
- Overall reduction of **23 to 28 million passengers**
- Approx. **USD 4.7 to 5.8 billion potential loss** of gross operating revenues of airlines

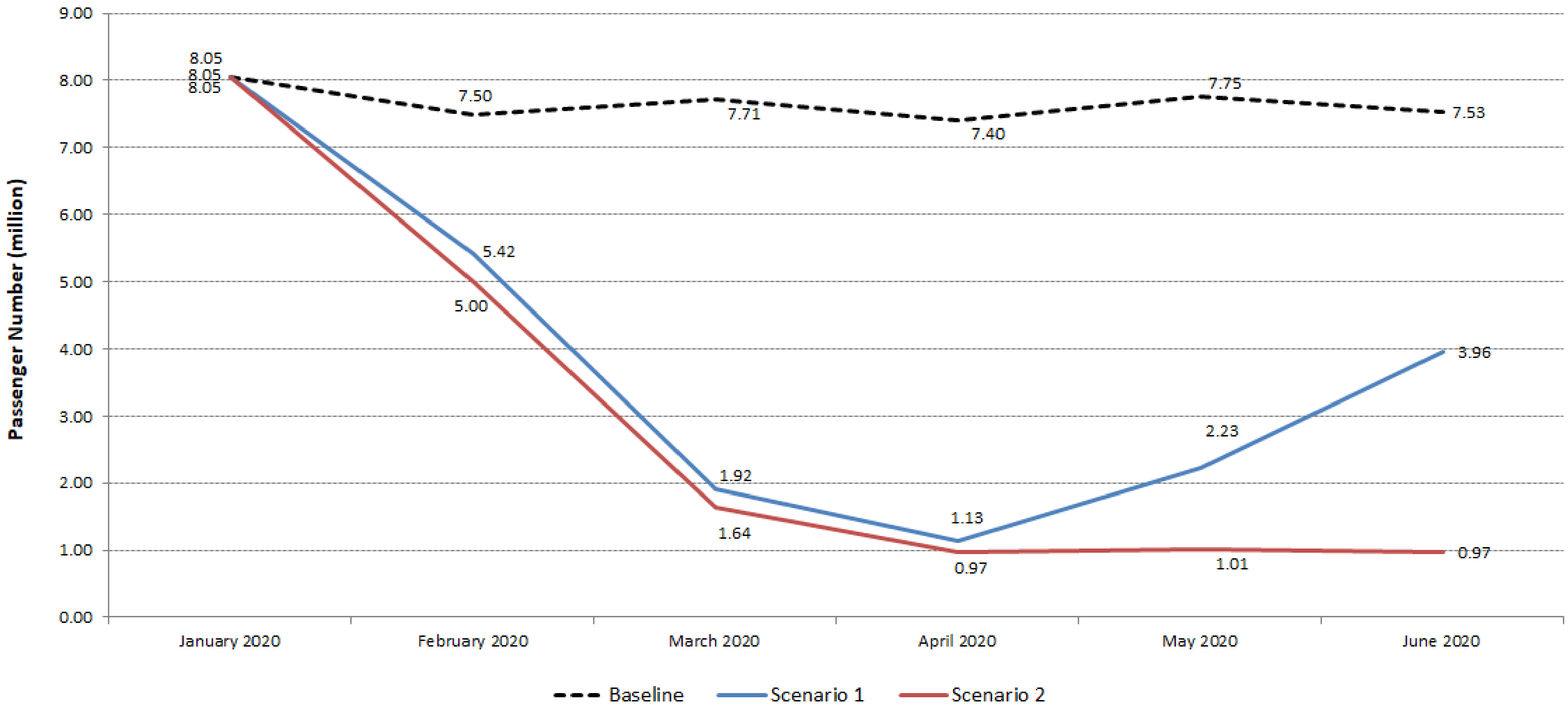
46 to 55% seat capacity reduction in first half 2020 from Baseline



Note: Some capacity change was announced before COVID-19 outbreak

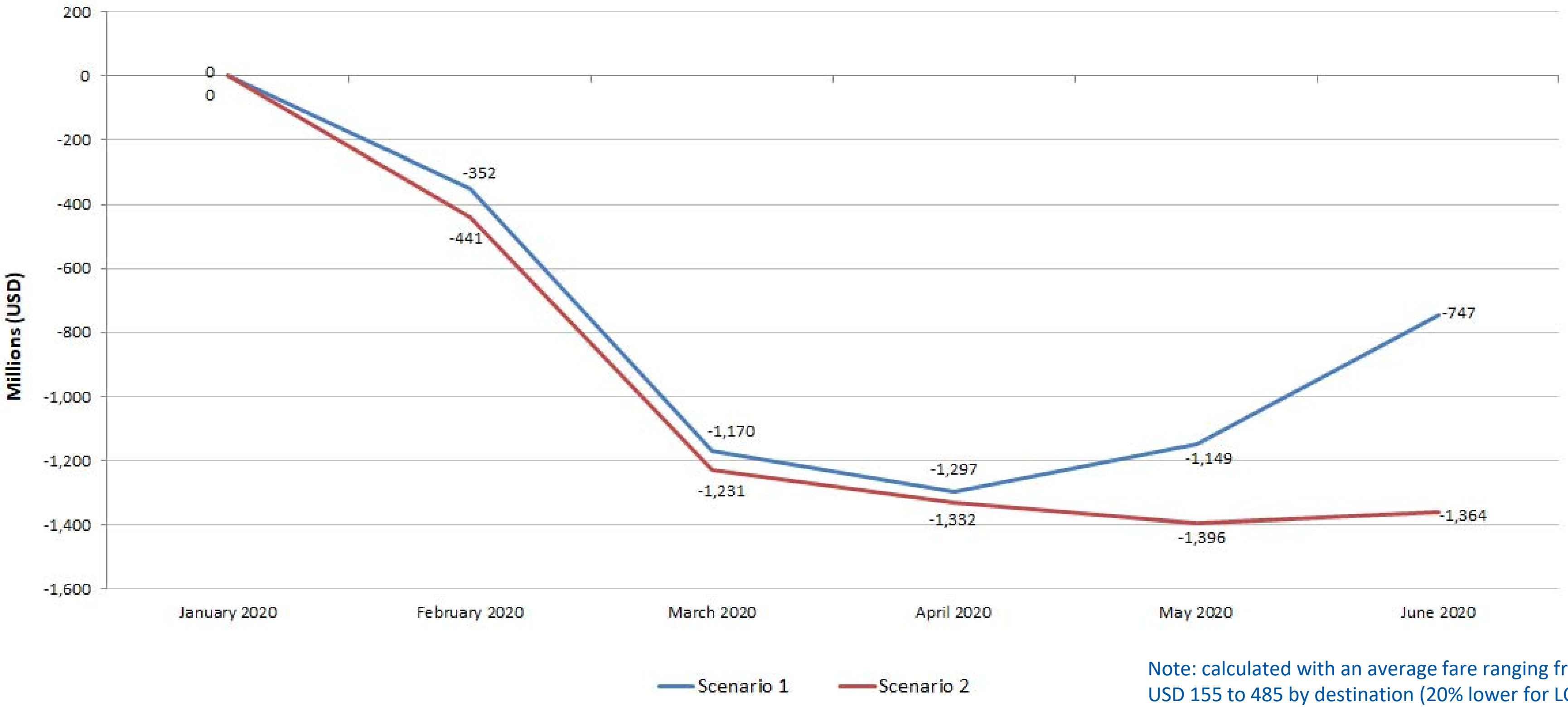
Source: ICAO estimates based on OAG, Routes Online and airline websites

23 to 28 million passenger reduction in first half 2020 compared to Baseline



Source: ICAO estimates

Approx. USD 4.7 to 5.8 billion loss of airline revenues in first half 2020 compared to Baseline



Note: calculated with an average fare ranging from USD 155 to 485 by destination (20% lower for LCCs)

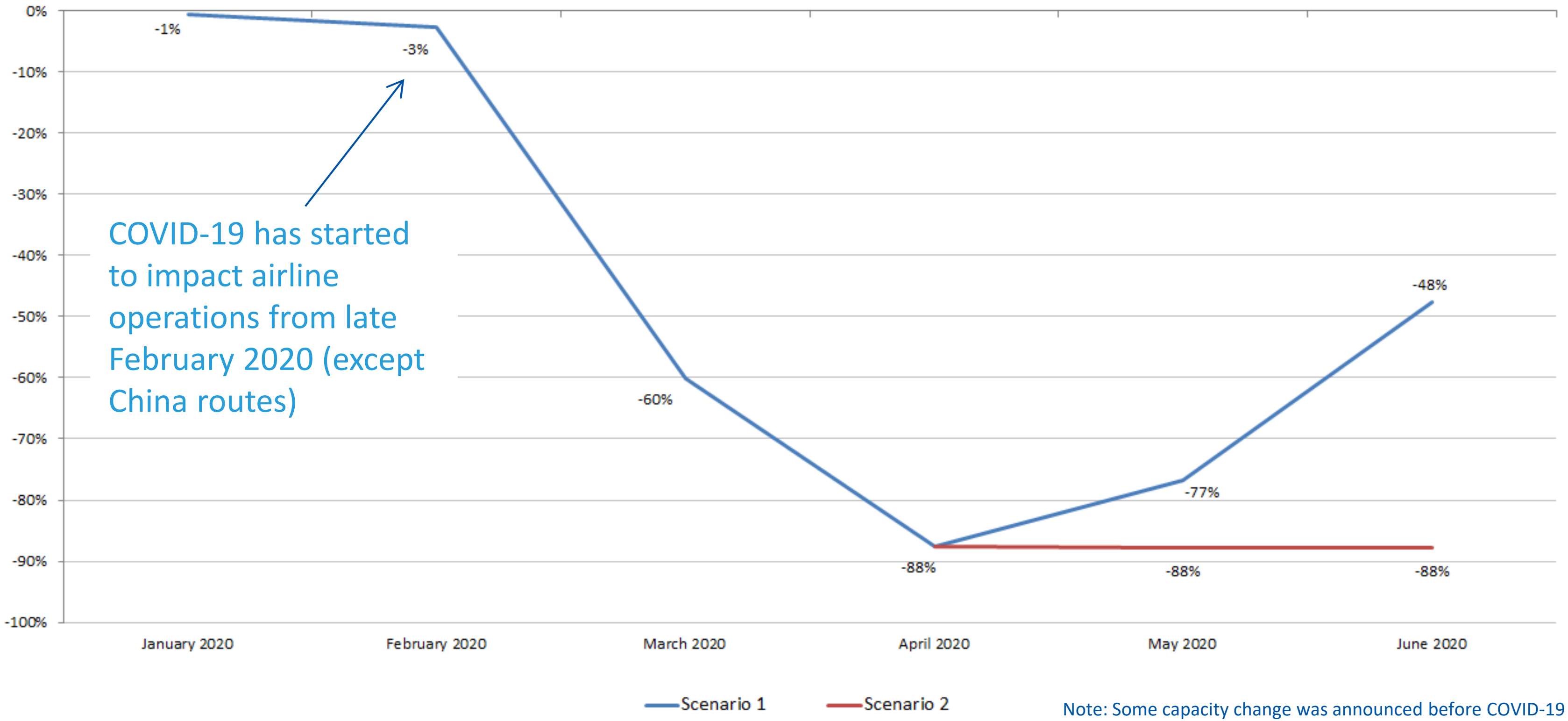
Source: ICAO estimates

Italy

The estimates indicate the impact in terms of scheduled international passenger traffic from/to Italy during first half 2020 compared to originally-planned:

- Overall reduction of **50 to 60% of seats offered by airlines**
- Overall reduction of **34 to 41 million passengers**
- Approx. **USD 4.0 to 4.9 billion potential loss** of gross operating revenues of airlines

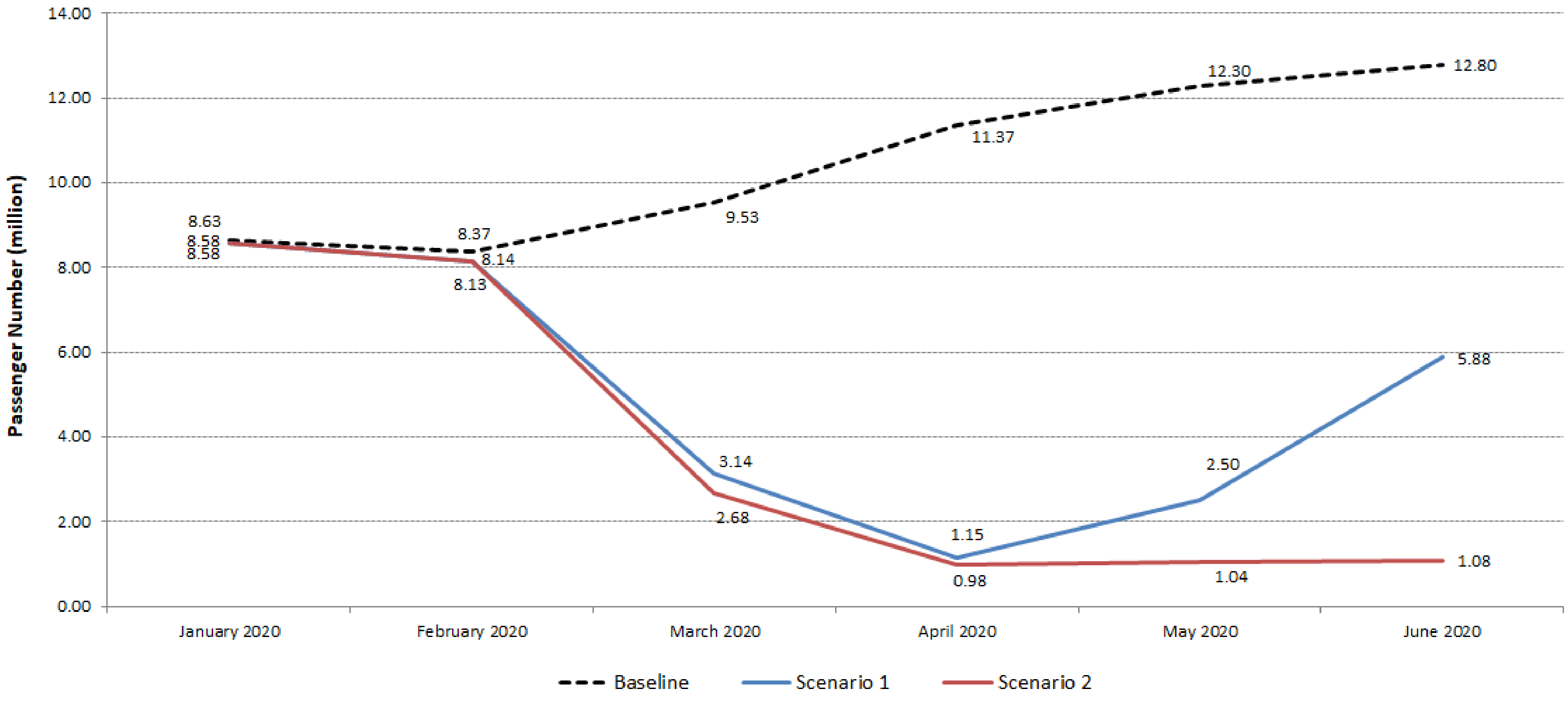
50 to 60% seat capacity reduction in first half 2020 from Baseline



Note: Some capacity change was announced before COVID-19 outbreak

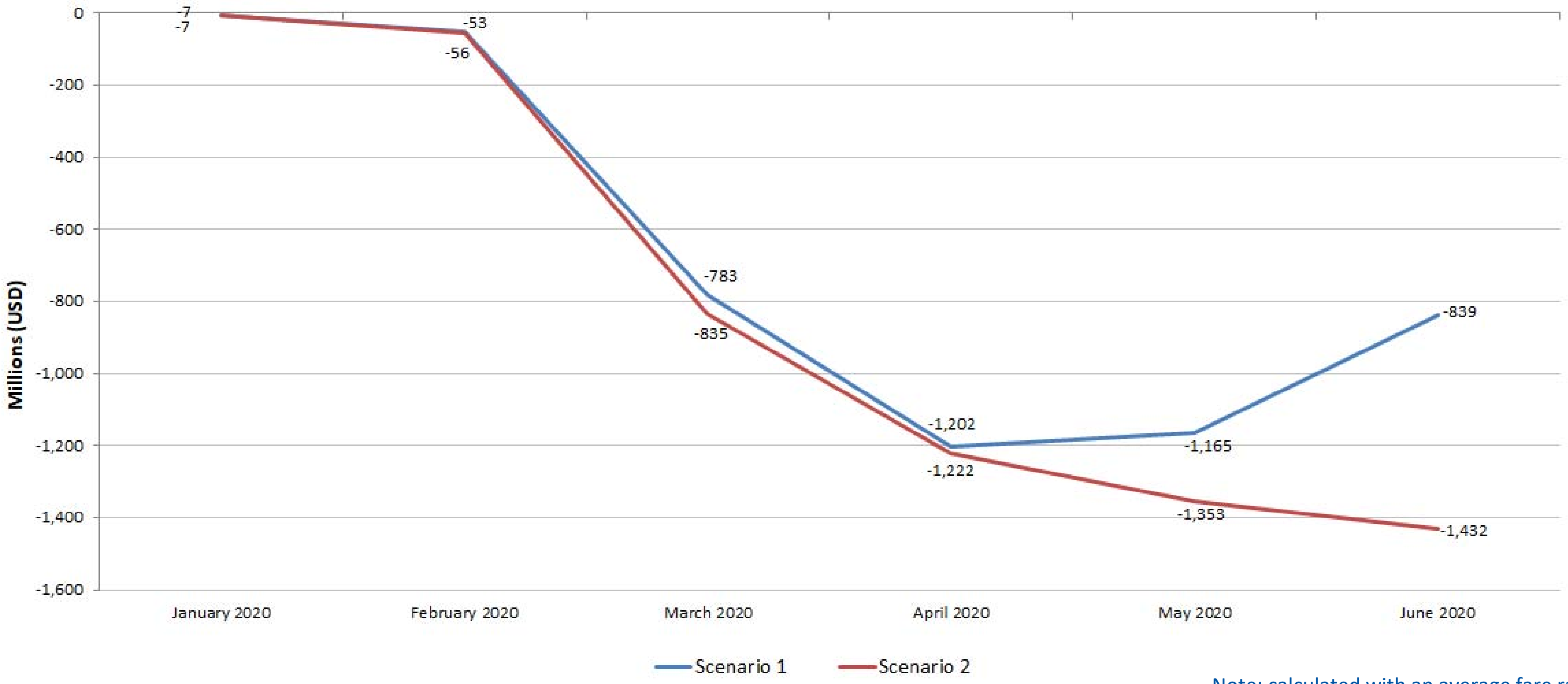
Source: ICAO estimates based on OAG, Routes Online and airline websites

34 to 41 million passenger reduction in first half 2020 compared to Baseline



ICAO UNITING AVIATION

Approx. USD 4.0 to 4.9 billion loss of airline revenues in first half 2020 compared to Baseline



Note: calculated with an average fare ranging from USD 60 to 485 by destination (20% lower for LCCs)

Source: ICAO estimates

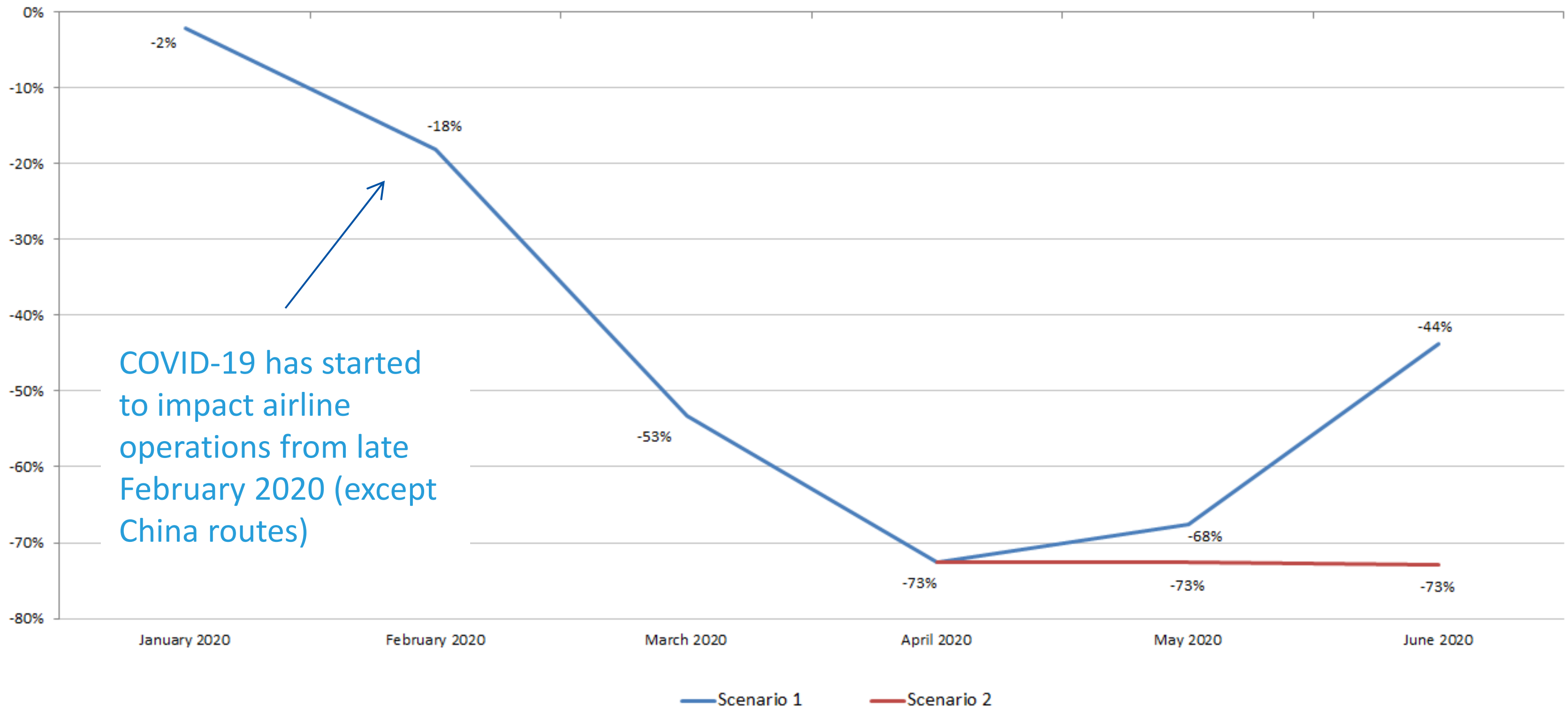
Iran (Islamic Republic of)

The estimates indicate the impact in terms of scheduled international passenger traffic from/to Italy during first half 2020 compared to originally-planned:

- Overall reduction of **43 to 49% of seats offered by airlines**
- Overall reduction of **2.4 to 2.8 million passengers**
- Approx. **USD 370 to 450 million potential loss** of gross operating revenues of airlines

ICAO UNITING AVIATION

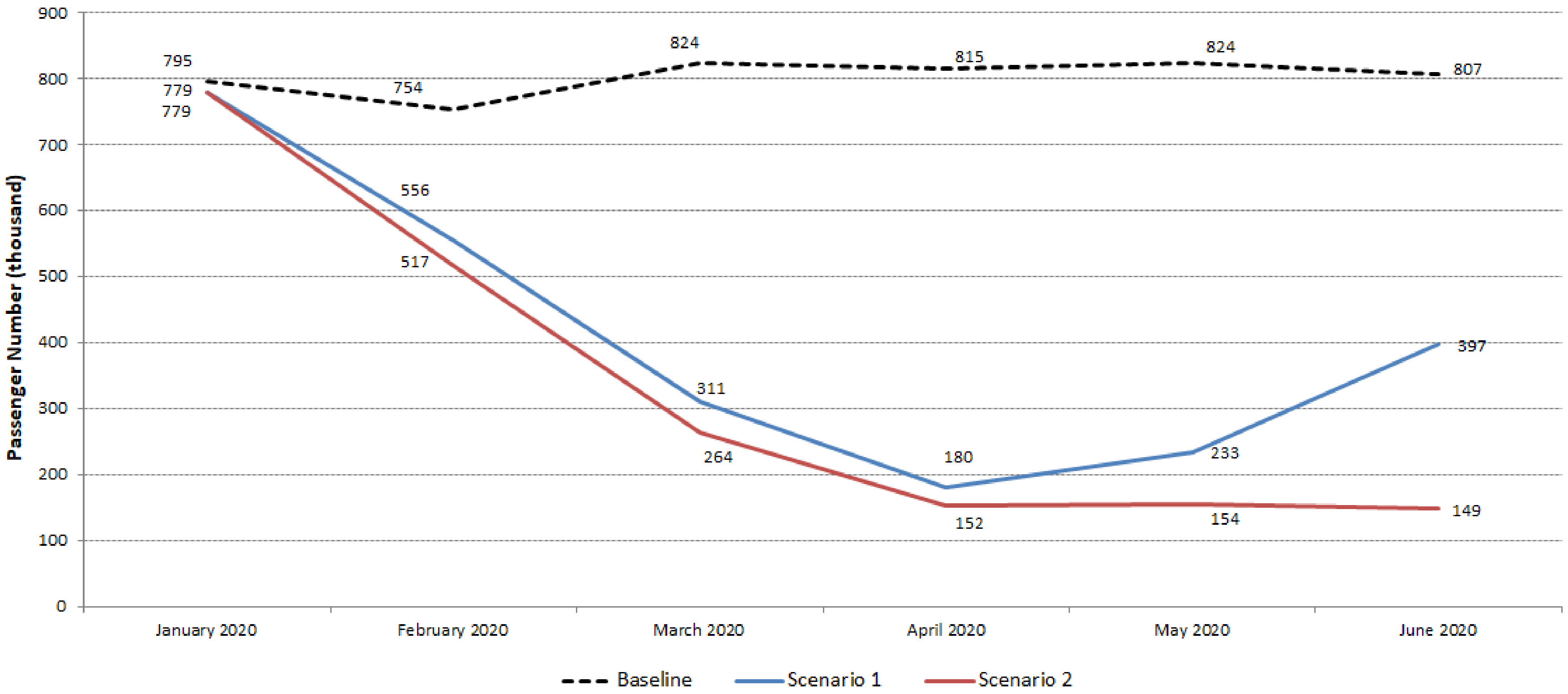
43 to 49 % seat capacity reduction in first half 2020 from Baseline



Note: Some capacity change was announced before COVID-19 outbreak

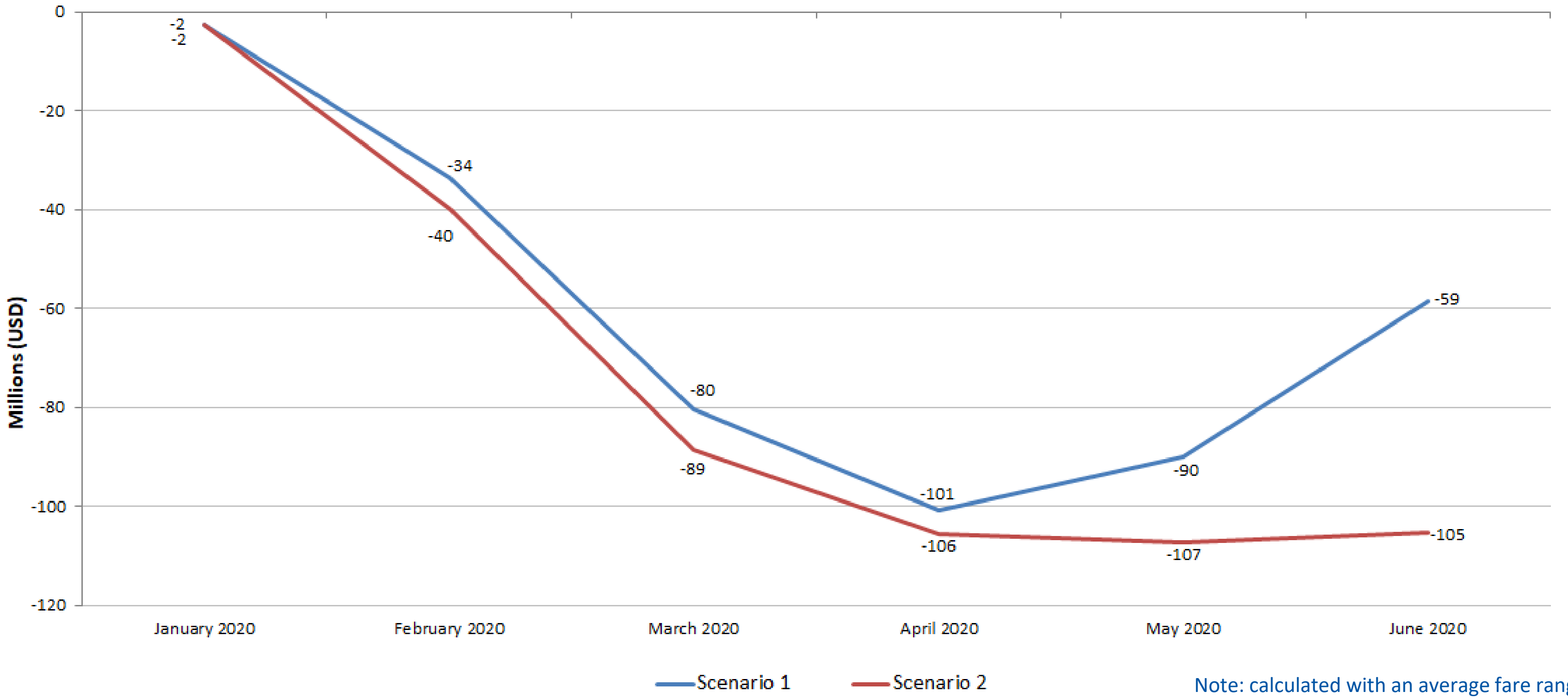
Source: ICAO estimates based on OAG, Routes Online and airline websites

2.4 to 2.8 million passenger reduction in first half 2020 compared to Baseline



Source: ICAO estimates

Approx. USD 370 to 450 million loss of airline revenues in first half 2020 compared to Baseline



Note: calculated with an average fare ranging from USD 105 to 370 by destination (20% lower for LCCs)

Source: ICAO estimates

Appendix: Scenario assumptions

Global level analysis

Assumptions (Global)	Baseline (Originally-planned)		Scenario 1 (V-shaped)		Scenario 2 (U-shaped)	
	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor
January 2020	0%	January 2019 results by region	actual (estimated)	January 2020 results by region	actual (estimated)	January 2020 results by region
February 2020	0%	February 2019 results by region	actual (estimated)	estimated based on airlines results already issued	actual (estimated)	estimated based on airlines results already issued
March 2020	0%	March 2019 results by region	actual (estimated)	15 percentage points lower than Baseline	actual (estimated)	25 percentage points lower than Baseline
April 2020	0%	April 2019 results by region	airlines' schedules filed in late March minus 5 to 15 percentage points, subject to update by actual	15 percentage points lower than Baseline	airlines' schedules filed in late March minus 5 to 15 percentage points, subject to update by actual	25 percentage points lower than Baseline
May 2020	0%	May 2019 results by region	50 to 65 percentage points lower than Baseline, subject to update by actual	10 percentage points lower than Baseline	65 to 80 percentage points lower than Baseline, subject to update by actual	25 percentage points lower than Baseline
June 2020	0%	June 2019 results by region	20 to 35 percentage points lower than Baseline, subject to update by actual	10 percentage points lower than Baseline	65 to 80 percentage points lower than Baseline, subject to update by actual	25 percentage points lower than Baseline

Note: Impacts on traffic departing from China (including Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China), Republic of Korea, Italy and Iran (Islamic Republic of) are separately calculated based on the respective State level analysis, which are subsequently integrated into the global level analysis.

China (Mainland International and Regional)

Assumptions (Mainland Intl and Regional)	Baseline (Originally-planned)		Scenario 1 (V-shaped)		Scenario 2 (U-shaped)	
	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor
January 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	same as Baseline	actual (estimated)	same as Baseline
February 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	15 percentage points lower than Baseline (except 30 points lower for Regional)	actual (estimated)	25 percentage points lower than Baseline (except 40 points lower for Regional)
March 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	15 percentage points lower than Baseline (except 30 points lower for Regional)	actual (estimated)	25 percentage points lower than Baseline (except 40 points lower for Regional)
April 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	maximum 10 percentage points more contraction from March reduction rate, subject to update by actual	15 percentage points lower than Baseline (except 30 points lower for Regional)	same reduction rate as March, subject to update by actual	25 percentage points lower than Baseline (except 40 points lower for Regional)
May 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	15 percentage points improvement from April reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as April, subject to update by actual	25 percentage points lower than Baseline (except 40 points lower for Regional)
June 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	30 percentage points improvement from May reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as May, subject to update by actual	25 percentage points lower than Baseline (except 40 points lower for Regional)

China (Hong Kong SAR, Macao SAR, Taiwan Province and Cross-Strait)

Assumptions (Hong Kong SAR et al)	Baseline (Originally-planned)		Scenario 1 (V-shaped)		Scenario 2 (U-shaped)	
	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor
January 2020	0%	80% (except 87% all LCCs)	actual (estimated)	same as Baseline	actual (estimated)	same as Baseline
February 2020	0%	80% (except 87% all LCCs)	actual (estimated)	15 percentage points lower than Baseline (except 8 and 30 points lower for Taiwan Province and Cross-strait, respectively)	actual (estimated)	25 percentage points lower than Baseline (except 13 and 40 points lower for Taiwan Province and Cross-strait, respectively)
March 2020	0%	80% (except 87% all LCCs)	actual (estimated)	15 percentage points lower than Baseline (except 30 points lower for Cross-strait)	actual (estimated)	25 percentage points lower than Baseline (except 40 points lower for Cross-strait)
April 2020	0%	80% (except 87% all LCCs)	maximum 10 percentage points (except 25 point for Taiwan) more contraction from March reduction rate, subject to update by actual	15 percentage points lower than Baseline (except 30 points lower for Cross-strait)	same reduction rate as March, subject to update by actual	25 percentage points lower than Baseline (except 40 points lower for Cross-strait)
May 2020	0%	80% (except 87% all LCCs)	15 percentage points improvement from April reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as April, subject to update by actual	25 percentage points lower than Baseline (except 40 points lower for Cross-strait)
June 2020	0%	80% (except 87% all LCCs)	30 percentage points improvement from May reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as May, subject to update by actual	25 percentage points lower than Baseline (except 40 points lower for Cross-strait)

Republic of Korea

Assumptions (Korea)	Baseline (Originally-planned)		Scenario 1 (V-shaped)		Scenario 2 (U-shaped)	
	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor
January 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	same as Baseline	actual (estimated)	same as Baseline
February 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	8 percentage points lower than Baseline (except 15 points lower for China/Hong Kong/Macao SARs)	actual (estimated)	13 percentage points lower than Baseline (except 25 points lower for China/Hong Kong/Macao SARs)
March 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	15 percentage points lower than Baseline	actual (estimated)	25 percentage points lower than Baseline same as Baseline
April 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	maximum 10 percentage points more contraction from March reduction rate, subject to update by actual	15 percentage points lower than Baseline	maximum 10 percentage points more contraction from March reduction rate, subject to update by actual	25 percentage points lower than Baseline
May 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	15 percentage points improvement from April reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as April, subject to update by actual	25 percentage points lower than Baseline
June 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	30 percentage points improvement from May reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as May, subject to update by actual	25 percentage points lower than Baseline

Italy

Assumptions (Italy)	Baseline (Originally-planned)		Scenario 1 (V-shaped)		Scenario 2 (U-shaped)	
	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor
January 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	same as Baseline	actual (estimated)	same as Baseline
February 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	same as Baseline (except 15 and 8 percentage points lower for China/Hong Kong SAR/Taiwan and Korea/Iran, respectively)	actual (estimated)	same as Baseline (except 25 and 13 percentage points lower for China/Hong Kong SAR/Taiwan and Korea/Iran, respectively)
March 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	15 percentage points lower than Baseline	actual (estimated)	25 percentage points lower than Baseline
April 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	maximum 15 percentage points more contraction from March reduction rate, subject to update by actual	15 percentage points lower than Baseline	maximum 25 percentage points more contraction from March reduction rate, subject to update by actual	25 percentage points lower than Baseline
May 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	15 percentage points improvement from April reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as April, subject to update by actual	25 percentage points lower than Baseline
June 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	30 percentage points improvement from May reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as May, subject to update by actual	25 percentage points lower than Baseline

ICAO UNITING AVIATION

Iran (Islamic Republic of)

Assumptions (Iran)	Baseline (Originally-planned)		Scenario 1 (V-shaped)		Scenario 2 (U-shaped)	
	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor	Seat capacity reduction from originally-planned	Passenger load factor
January 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	same as Baseline	actual (estimated)	same as Baseline
February 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	same as Baseline (except 15 and 8 percentage points lower for China and Korea, respectively)	actual (estimated)	same as Baseline (except 25 and 13 percentage points lower for China and Korea, respectively)
March 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	actual (estimated)	15 percentage points lower than Baseline	actual (estimated)	25 percentage points lower than Baseline
April 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	maximum 25 percentage points more contraction from March reduction rate, subject to update by actual	15 percentage points lower than Baseline	maximum 25 percentage points more contraction from March reduction rate, subject to update by actual	25 percentage points lower than Baseline
May 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	15 percentage points improvement from April reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as April, subject to update by actual	25 percentage points lower than Baseline
June 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	30 percentage points improvement from May reduction rate, subject to update by actual	10 percentage points lower than Baseline	same reduction rate as May, subject to update by actual	25 percentage points lower than Baseline

Contact: ECD@icao.int

https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx

https://www.icao.int/Newsroom/Pages/Economic-impact-estimates-due-to-COVID-19-travel-bans.aspx

https://www.icao.int/Security/COVID-19/Pages/default.aspx

http://www.capsca.org/CoronaVirusRefs.html