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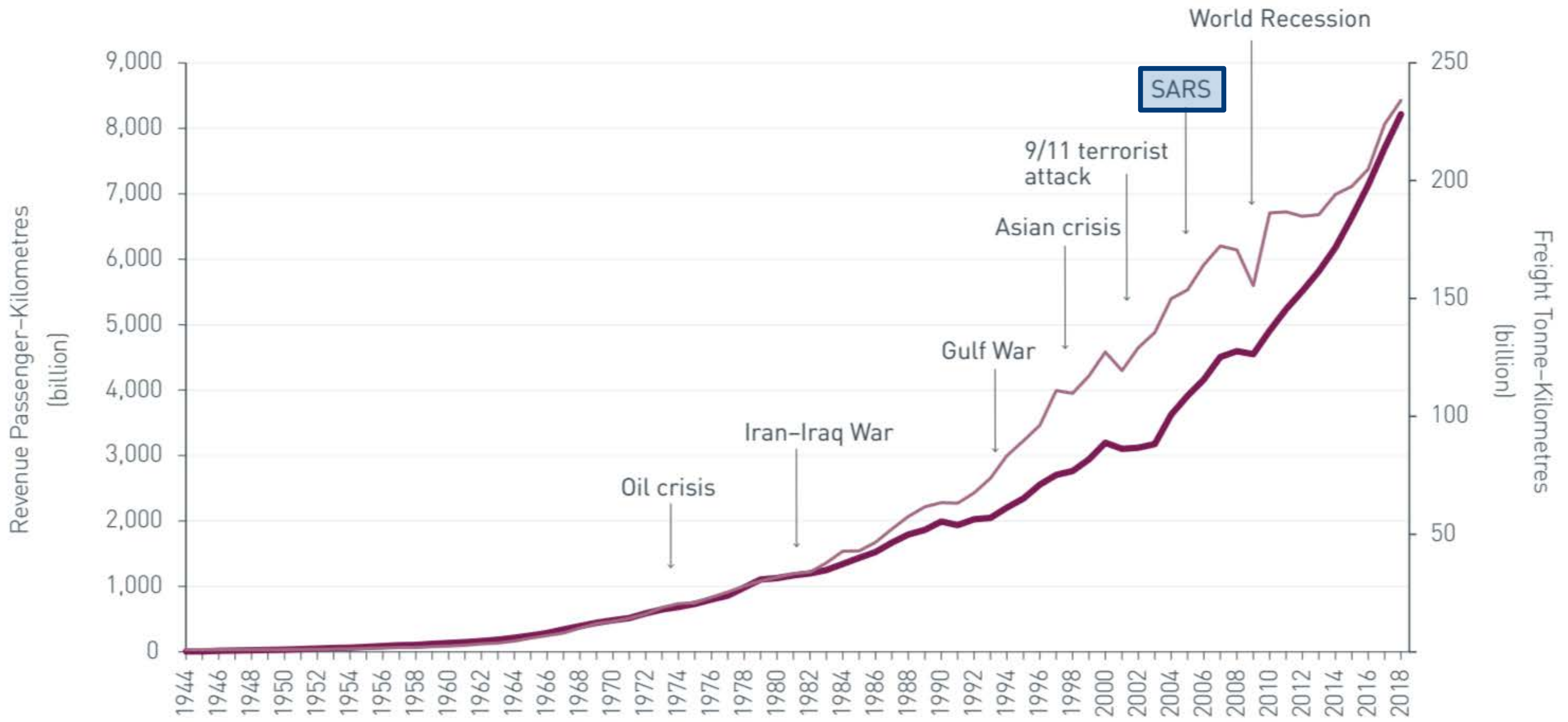
Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis

Montréal, Canada
27 March 2020

Contents

Introduction and Background

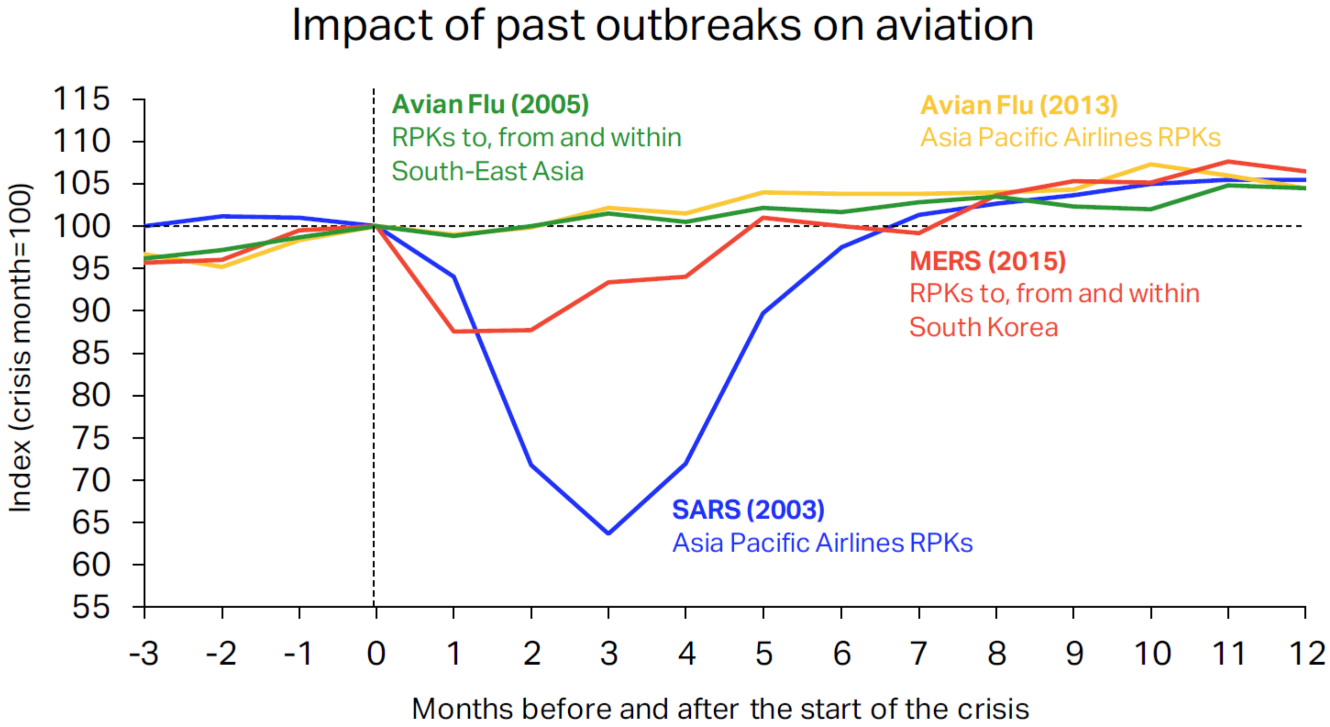
Air traffic has been vulnerable to external factors including disease outbreaks



Source: ICAO Annual Report of the Council

Scheduled commercial traffic
Total (international and domestic) services

Previous outbreaks/pandemics had a V-shape 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**.

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Disease outbreak directly impacts air traffic and revenues of aviation industry

Number of cases / countries affected

- Flights cancellations
- Aircraft groundings
- Travel bans
- Border closures

Traffic decline

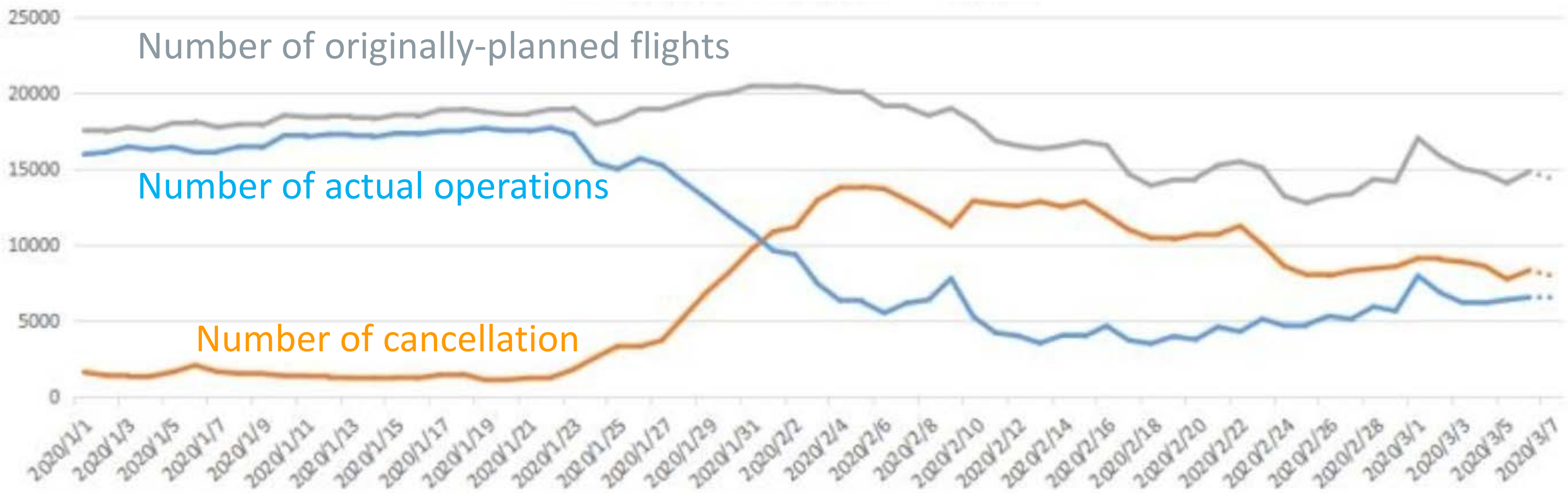
- Fewer flights
- Lower load factors
- Impact on yield

Revenue loss

- Proportionate to traffic loss
- Decline in unit revenues, especially in non-aeronautical (airports)

Source: The Impact of COVID-19 on the Airport Business (ACI)

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 (retrieved on 9 March 2020)

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

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February 2020 **International passenger seat capacity**

Country/Territory		Capacity change from originally-planned	
China	-	10,532,200	-61%
Hong Kong SAR of China (CN)	-	2,363,300	-36%
Republic of Korea	-	1,717,100	-19%
Japan	-	1,592,400	-15%
Thailand	-	1,452,500	-15%
Taiwan, Province of China (CN)	-	1,446,700	-23%
Singapore	-	807,600	-12%
Viet Nam	-	731,900	-16%
Macao SAR of China (CN)	-	721,500	-64%
Philippines	-	646,100	-18%
United States	-	620,300	-3%
Malaysia	-	448,200	-8%
Indonesia	-	426,100	-10%
Russian Federation	-	317,900	-5%
Cambodia	-	277,900	-21%
Turkey	-	277,800	-4%
Italy	-	268,800	-3%
United Arab Emirates	-	252,900	-2%
Australia	-	241,300	-5%
United Kingdom	-	188,900	-1%
Iran Islamic Republic of	-	169,800	-18%
France	-	158,000	-1%
Myanmar	-	147,500	-21%
Germany	-	145,600	-1%
India	-	116,800	-2%
Morocco	-	108,200	-5%
Qatar	-	99,300	-2%
Canada	-	96,200	-1%
Lao People's Democratic Republic	-	71,900	-21%
Finland	-	71,400	-4%
World total	-	**27,747,600**	**-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

State/Territory with 100 or more confirmed cases*

State/Territory with 1,000 or more confirmed cases*

State/Territory with 10,000 or more confirmed cases*

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

Source: OAG scheduled data adjusted by ICAO estimates

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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 States	-	4,617,500	-18%
Thailand	-	4,451,400	-45%
United Kingdom	-	4,261,200	-19%
Taiwan, Province of China (CN)	-	4,026,700	-62%
Spain	-	3,289,600	-23%
Singapore	-	3,172,100	-43%
United Arab Emirates	-	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%
Philippines	-	1,626,200	-44%
Switzerland	-	1,567,900	-26%
Indonesia	-	1,402,000	-32%
Canada	-	1,125,900	-15%
Austria	-	1,119,300	-28%
Russian Federation	-	1,081,500	-18%
Australia	-	1,058,200	-23%
Netherlands	-	1,027,200	-14%
Belgium	-	1,000,500	-29%
Qatar	-	968,400	-20%
Portugal	-	948,100	-22%
World total	-	**121,831,580**	**-32%**

March 2020 **excluding from/to China, Iran, Italy and Korea**

Country/Territory		Capacity change from originally-planned	
Germany	-	4,277,933	-25%
United Kingdom	-	3,387,241	-16%
United States	-	3,217,641	-14%
Spain	-	2,599,048	-20%
United Arab Emirates	-	2,465,717	-20%
Turkey	-	2,277,434	-31%
France	-	2,106,010	-18%
Singapore	-	2,031,900	-35%
Thailand	-	1,744,454	-29%
Saudi Arabia	-	1,712,474	-30%
India	-	1,643,127	-24%
Malaysia	-	1,537,179	-33%
Switzerland	-	1,380,332	-24%
Indonesia	-	986,192	-27%
Austria	-	966,037	-26%
Japan	-	935,256	-20%
Canada	-	871,795	-12%
Portugal	-	812,785	-20%
Denmark	-	807,531	-25%
Netherlands	-	789,914	-12%
Poland	-	788,164	-21%
Israel	-	788,068	-39%
Belgium	-	781,479	-26%
Viet Nam	-	754,856	-34%
Qatar	-	714,608	-16%
Egypt	-	707,091	-25%
Sweden	-	673,186	-22%
Morocco	-	638,169	-28%
Russian Federation	-	631,076	-12%
Australia	-	619,167	-16%
World total	-	**58,262,776**	**-20%**

In March 2020, international passenger capacity so far reduced by 32%, with significant reduction not only in States experiencing an early outbreak but also at the global scale.

State/Territory with 100 or more confirmed cases*

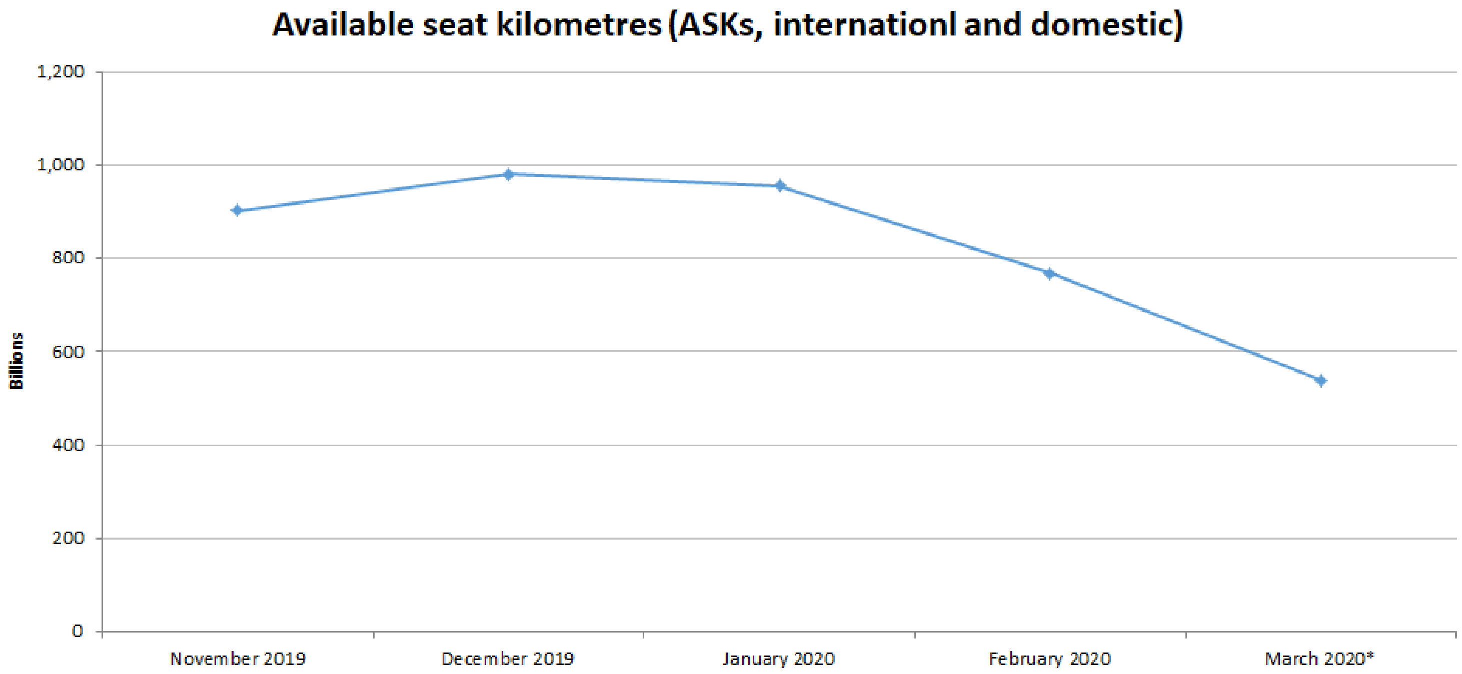
State/Territory with 1,000 or more confirmed cases*

State/Territory with 10,000 or more confirmed cases*

*: Coronavirus Disease 2019 (COVID-19) Situation Report by WHO (24 March 2020)

Source: OAG scheduled data adjusted by ICAO estimates

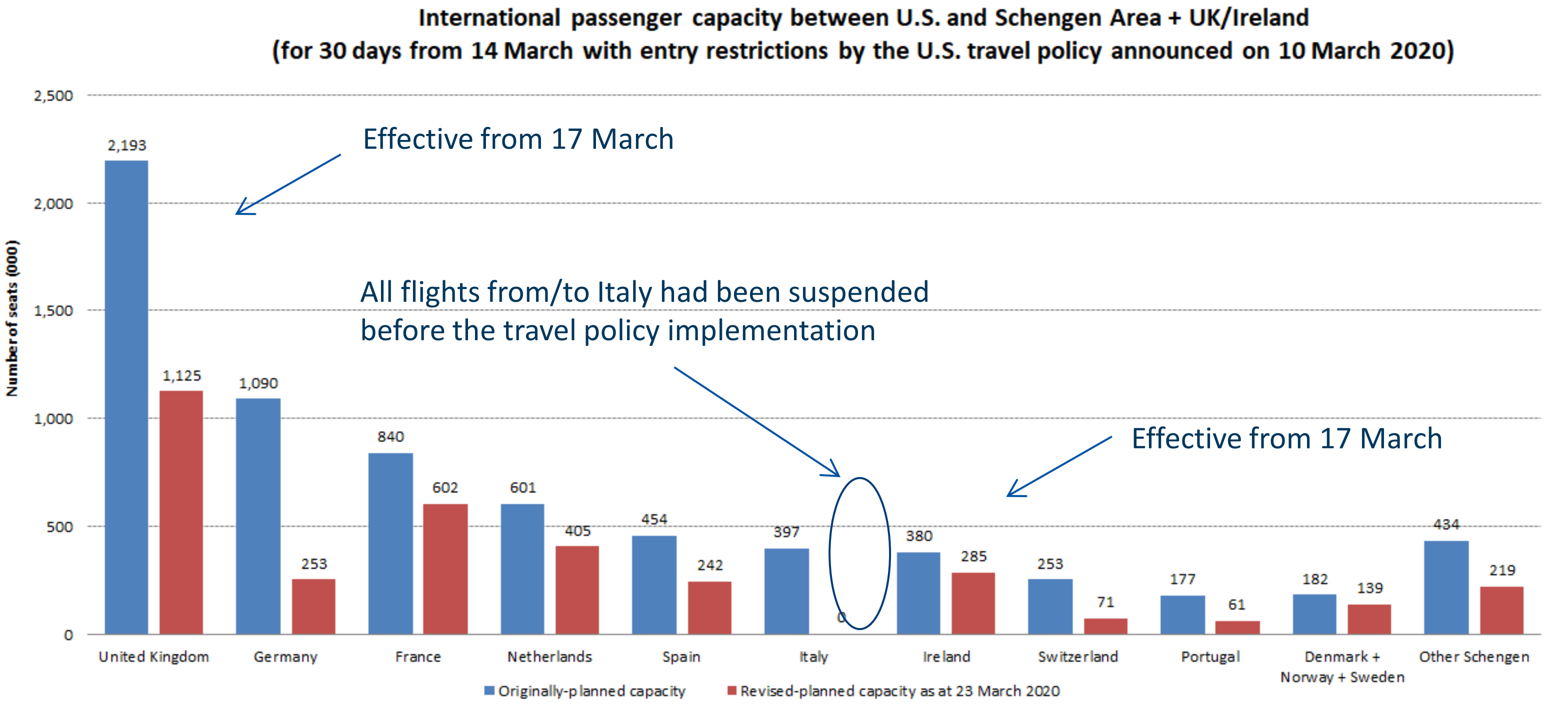
Air traffic reduction no longer limited to initial outbreak countries



Note: March 2020 data is up till 21 March 2020

Source: ICAO ADS-B operation data

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



51% 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

Global Level Analysis

Global level analysis presented here is still <u>very preliminary and subject to substantial changes</u>.
More robust, comprehensive analysis with the extension till 2Q 2020 will be available shortly.

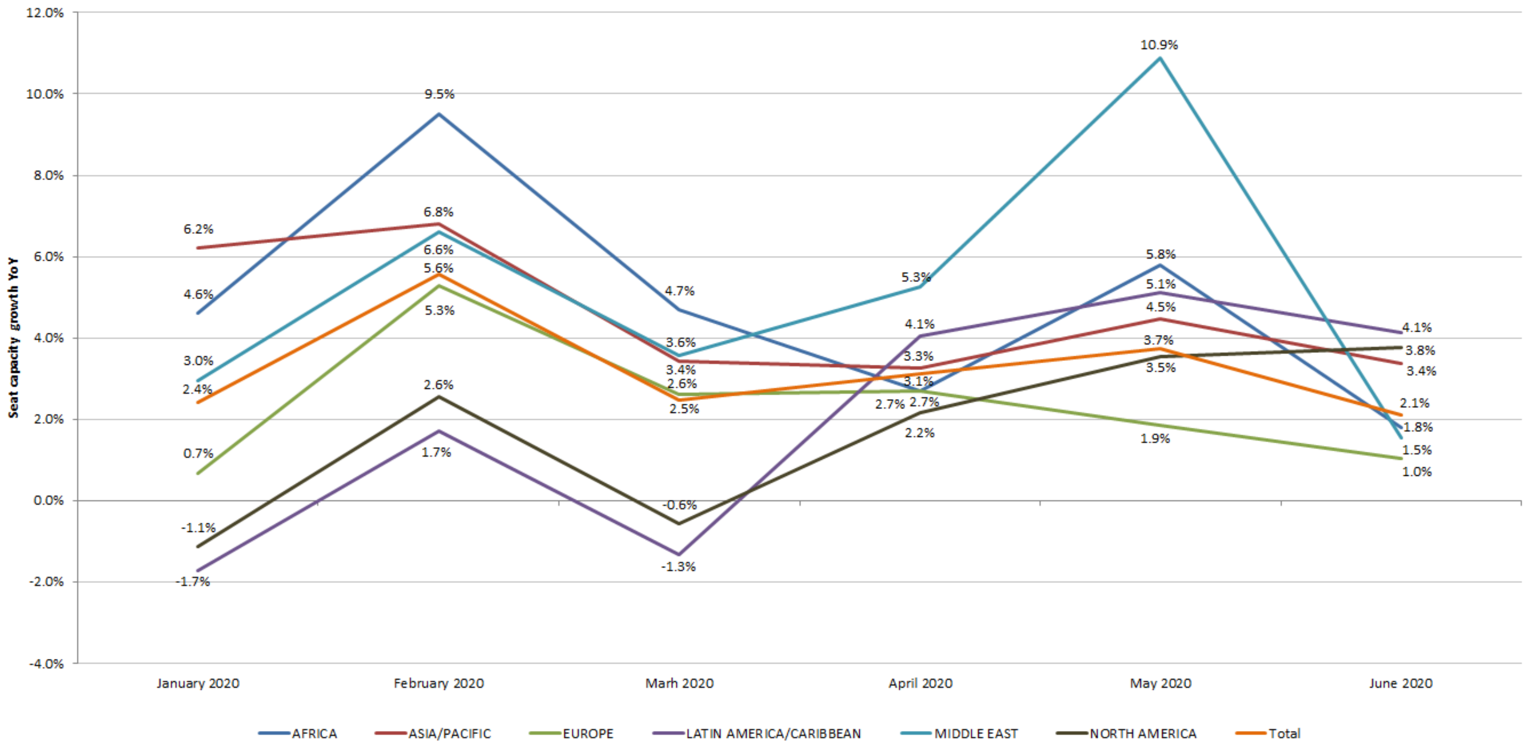
Scenario analysis of COVID-19 outbreak impact for first half 2020

- Scope of analysis:
  - scheduled international passenger traffic worldwide
  - regional breakdown
  - first half of year 2020 (1Q and 2Q 2020)

- Three scenarios to measure the impact of COVID-19 outbreak:
  - **Baseline (hypothetical situation without COVID-19 outbreak)** built using "originally-planned" schedules of airlines and 2019 level of load-factor
  - **Scenario 1 (V-shaped, quick recovery from May 2020)**
  - **Scenario 2 (U-shaped, prolonged contraction continuing to June 2020)**

Source: ICAO estimates

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



A total of YoY 3% seat capacity increase originally - planned for 1Q 2020 (scheduled international passenger set number)

Source: OAG scheduled data and ICAO estimates (Apr – Jun 2020)

Over 50% drop in passenger seat capacity in Asia/Pacific, followed by Middle East and Europe

International passenger seat capacity: originally-planned (baseline) vs. actual (estimated)

Region	January 2020	February 2020	March 2020
AFRICA	-0.2%	-2.5%	-22.7%
ASIA/PACIFIC	-0.1%	-22.3%	-52.1%
EUROPE	-0.2%	-1.4%	-25.6%
LATIN AMERICA/CARIBBEAN	-0.1%	0.6%	-11.3%
MIDDLE EAST	-0.3%	-2.1%	-27.5%
NORTH AMERICA	0.0%	-2.4%	-16.7%
Total	-0.1%	-7.9%	-31.7%
Originally-planned capacity	376,027,900	352,632,800	384,162,700
Actual capacity (estimated)	375,495,100	324,885,300	262,331,100

Source: OAG scheduled data adjusted by ICAO estimates

Air passenger demand has been falling by more than capacity cut

International passenger number: originally-planned (baseline) vs. actual (estimated)

	Scenario 1			Scenario 2		
Region	January 2020	February 2020	March 2020	January 2020	February 2020	March 2020
AFRICA	-0.6%	-2.9%	-33.5%	-0.6%	-2.9%	-33.5%
ASIA/PACIFIC	-0.4%	-26.2%	-58.4%	-0.4%	-28.3%	-59.4%
EUROPE	2.2%	1.0%	-34.6%	2.2%	1.0%	-34.9%
LATIN AMERICA/CARIBBEAN	0.2%	0.9%	-22.2%	0.2%	0.9%	-22.2%
MIDDLE EAST	4.3%	2.1%	-37.4%	4.4%	2.0%	-37.6%
NORTH AMERICA	1.2%	-1.2%	-26.8%	1.2%	-1.2%	-26.8%
Total	**1.1%**	**-7.7%**	**-40.2%**	**1.2%**	**-8.3%**	**-40.7%**

Note 1: Scenarios 1 and 2 are based on the State-level analysis of China (Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China), Republic of Korea, Italy and Iran (Islamic Republic of)

Note 2: In calculating the number of passengers, it is assumed that "originally-planned" load factor for 1Q 2020 is the same as 1Q 2019 results; and "actual" load factor in January 2020 is a reported result (February and March are ICAO's preliminary estimates)

Source: ICAO estimates

Globally, USD 17 billion loss of airline passenger revenues for 1Q 2020 compared to Baseline

Gross passenger revenues: originally-planned (baseline) vs. actual (estimated)

(USD, million)	Scenario 1			Scenario 2		
Region	January 2020	February 2020	March 2020	January 2020	February 2020	March 2020
AFRICA	-20	-60	-830	-20	-60	-830
ASIA/PACIFIC	-50	-2,580	-6,540	-50	-2,780	-6,640
EUROPE	270	110	-4,370	270	110	-4,390
LATIN AMERICA/CARIBBEAN	0	20	-540	0	20	-540
MIDDLE EAST	180	90	-1,500	180	90	-1,500
NORTH AMERICA	60	-60	-1,390	60	-60	-1,390
Total	**450**	**-2,480**	**-15,160**	**450**	**-2,680**	**-15,300**

Note 1: 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)

Note 2: Scenarios 1 and 2 are based on the State-level analysis of China (Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China), Republic of Korea, Italy and Iran (Islamic Republic of)

Note 3. Revenues were calculated using yield and average trip distance collected by and reported to ICAO, supplemented by IATA data

Source: ICAO estimates

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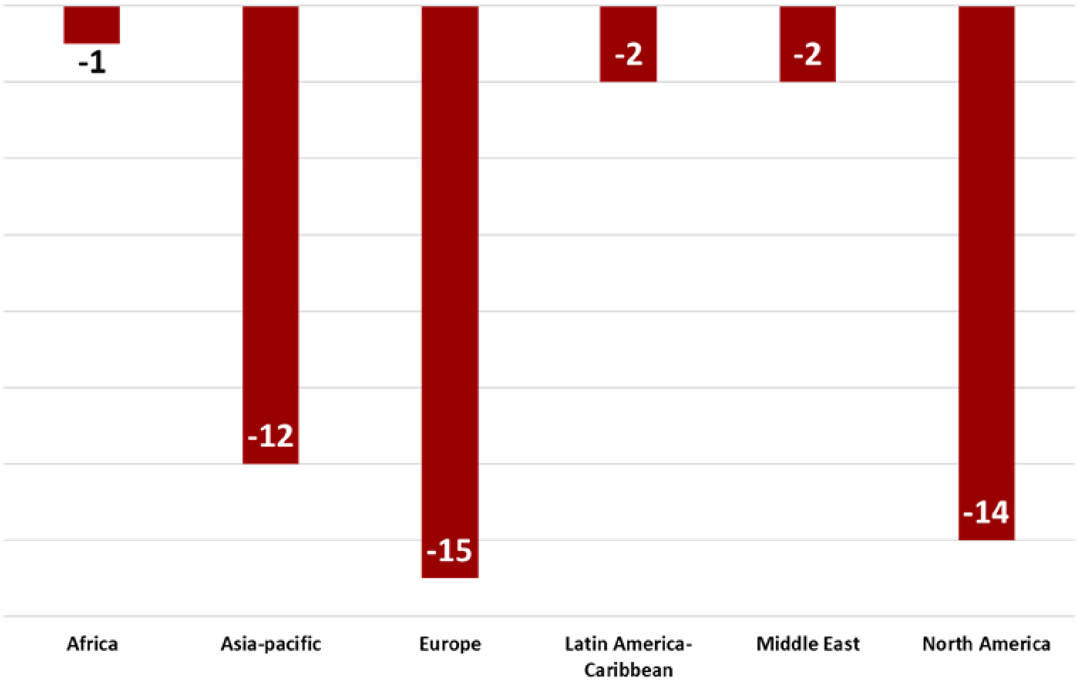
Airport may lose approx. USD 46 billion for 2020 (estimated by ACI)

Potential losses for 2020 (billions USD)



Total airport industry losses:
> USD 46 billion

Decline in industry revenues:
>25%

Source: The Impact of COVID-19 on the Airport Business (ACI)

State/Territory Level Analysis

Figures and estimates herein will be updated
with the situation evolving and more information available.
The analysis of China will be extended till 2Q 2020 shortly.

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

Estimated impact of COVID-19 outbreak on scheduled **international passenger** traffic during **1Q 2020** compared to originally-planned:

- **China (including Hong Kong/Macao SARs and Taiwan Province)**: 40% seat capacity reduction, 30.8 to 32.6 million passenger reduction, USD 6.9 to 7.3 billion loss of gross operating revenues of airlines from/to the country
- **Republic of Korea**: 29% seat capacity reduction, 7.8 to 8.6 million passenger reduction, USD 1.5 to 1.7 billion loss of gross operating revenues of airlines from/to the country
- **Italy**: 23% seat capacity reduction, 6.7 to 7.1 million passenger reduction, USD 0.8 to 0.9 billion loss of gross operating revenues of airlines from/to the country
- **Iran (Islamic Republic of)**: 25% seat capacity reduction, 730,000 to 810,000 passenger reduction, USD 120 to 130 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

Mainland China

The estimates indicate the impact in terms of scheduled international passenger traffic from/to mainland China (including between mainland China and Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China) during 1Q 2020 compared to originally-planned:

- Overall reduction of **47% of seats offered by airlines**
- Overall reduction of **21.9 to 22.9 million passengers**
- Approx. **USD 4.9 to 5.1 billion potential loss** of gross operating revenues of airlines

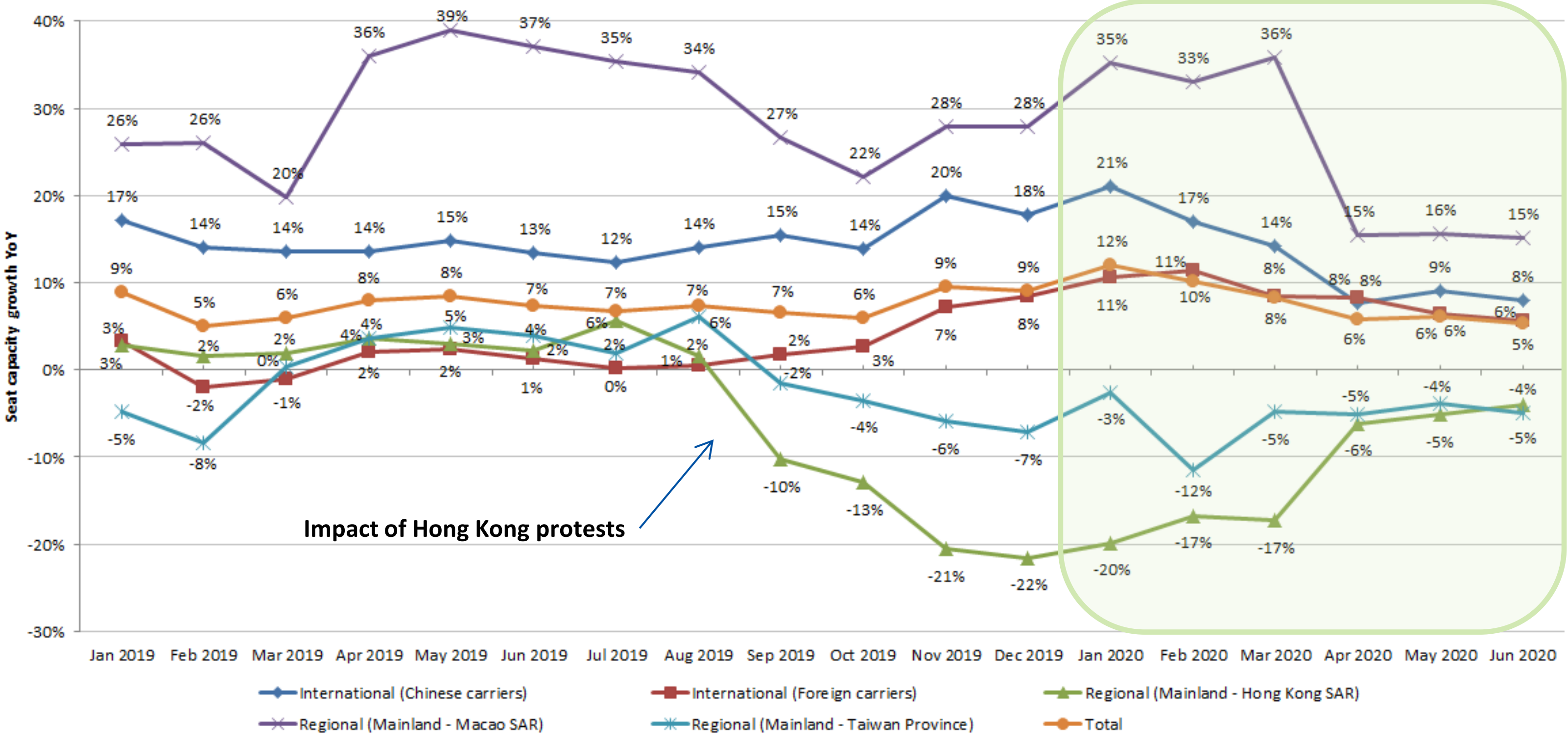
Scope of analysis: Mainland China

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

Scenario analysis of COVID-19 outbreak impact for 1Q 2020

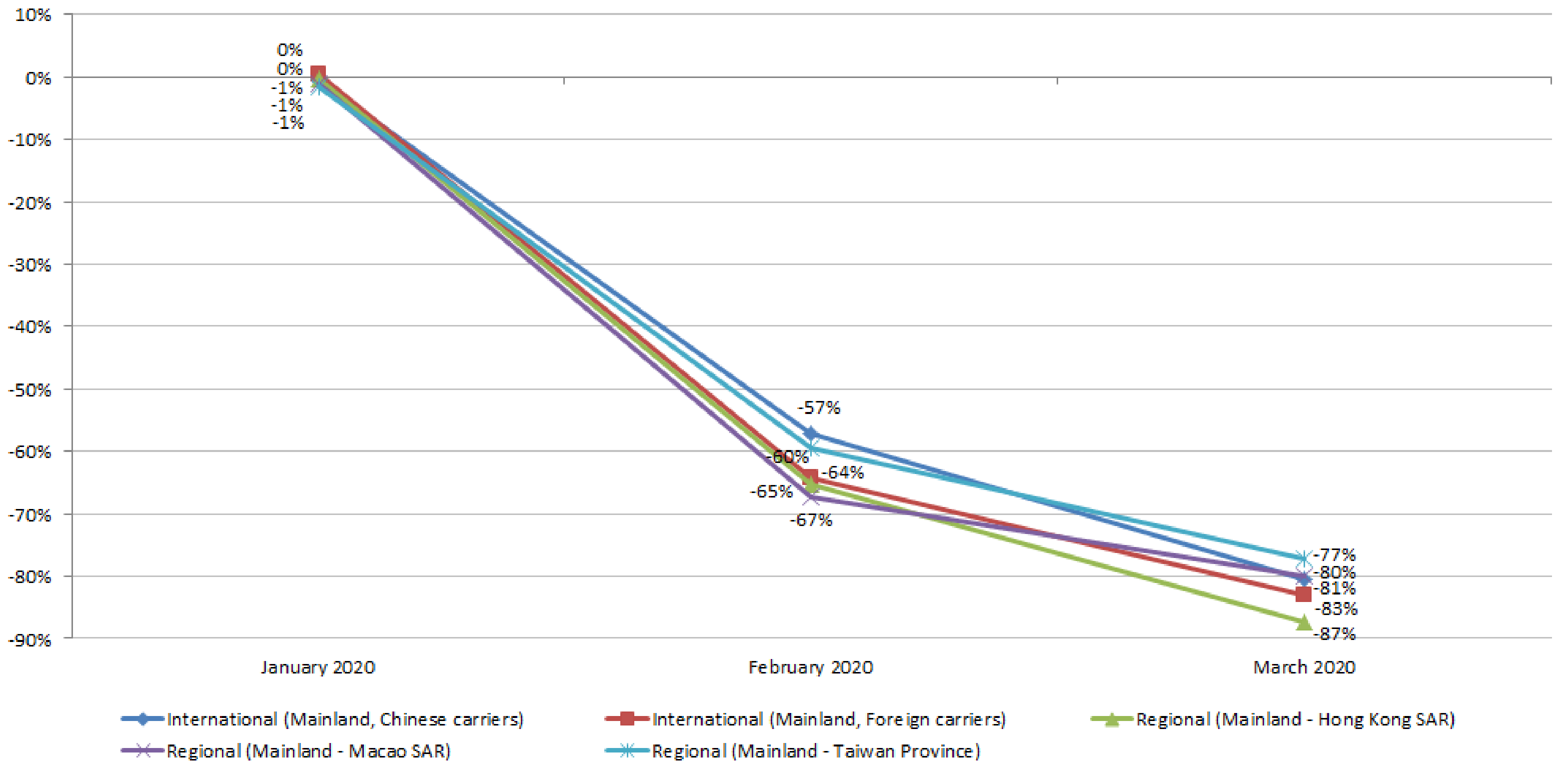
- Baseline (hypothetical situation without COVID-19 outbreak)
  - Seat capacity: used "originally-planned" winter schedule
  - Load factor: applied 78% for Chinese carriers, 80% for foreign carriers and 87% for LCCs (both Chinese and foreign)
- Scenario 1 (mild)
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January; 15 and 12 percentage points lower than baseline in February and March, respectively (30 and 25 percentage points lower for “Regional”; 15 percentage points lower in March for Korea, Iran and Italy)
- Scenario 2 (severe)
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January, 25 and 22 percentage points lower than baseline in February and March, respectively (40 and 33 percentage points lower for “Regional”; 25 percentage points lower in March for Korea, Iran and Italy)

Baseline: 8% seat capacity increase (year-on-year) for first half 2020



A total of YoY 8% seat capacity increase originally - planned for 1Q/2Q 2020 despite the reduction of capacity between mainland China and Hong Kong SAR and Taiwan Province

Scenarios 1 & 2: 47% seat capacity reduction from Baseline



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

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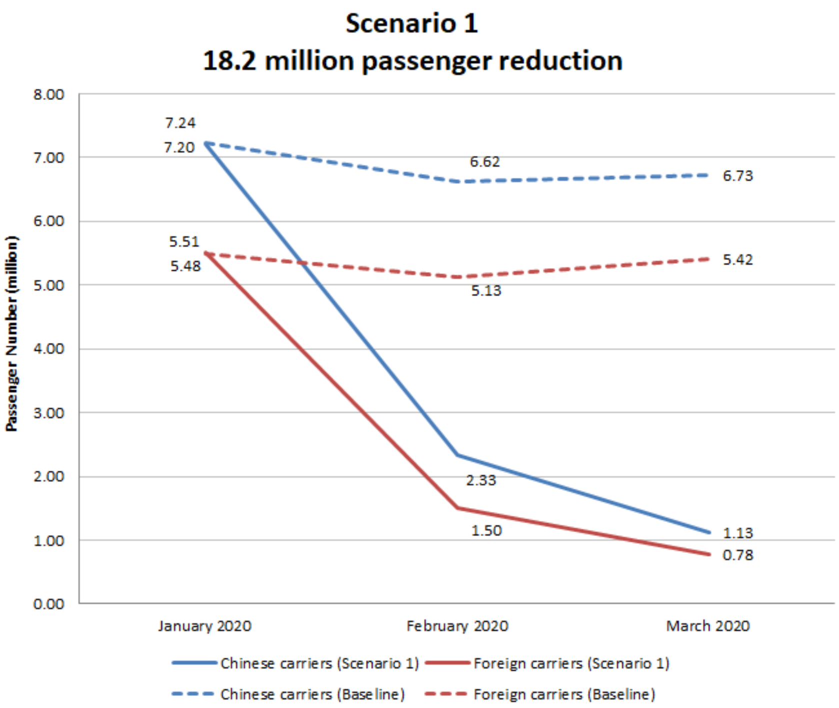
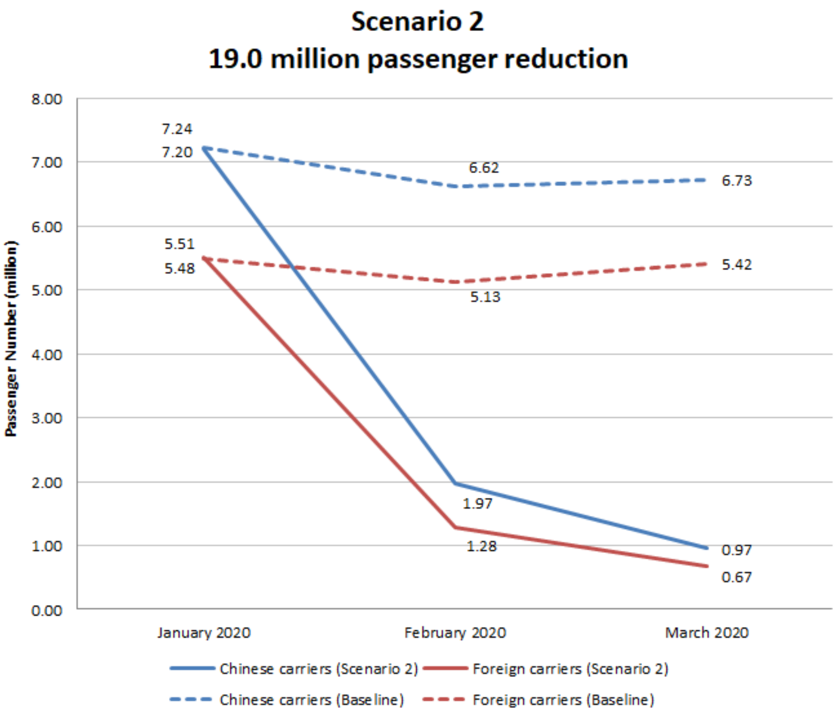
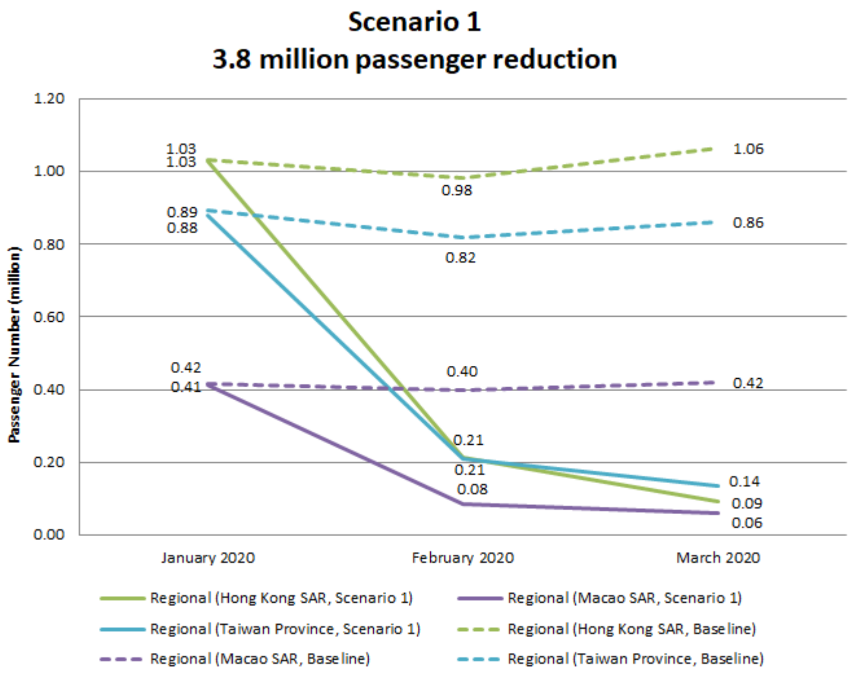
18.2 to 19.0 million "international" passenger reduction in 1Q 2020 compared to Baseline

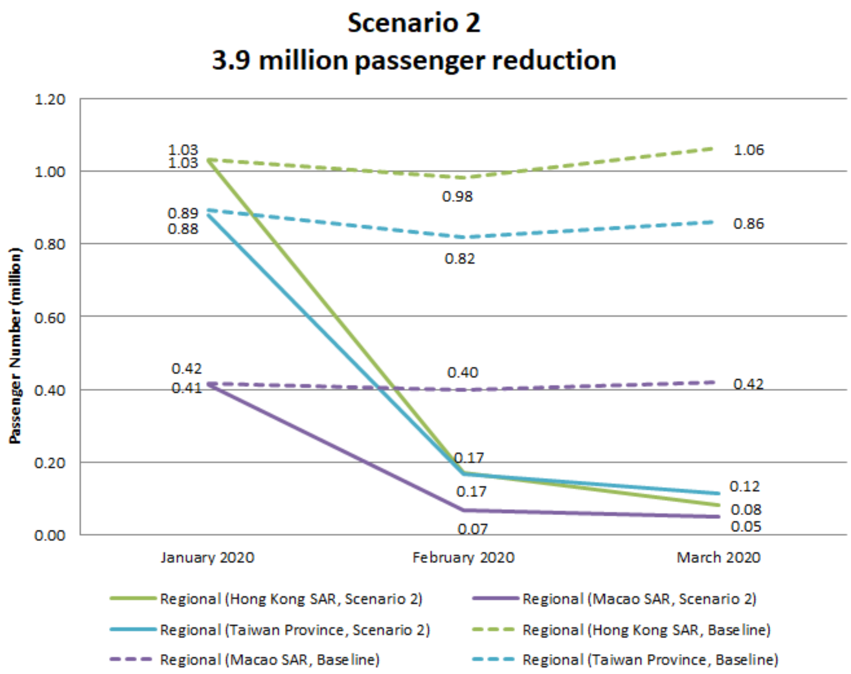




Source: ICAO estimates

3.8 to 3.9 million "regional" passenger reduction in 1Q 2020 compared to Baseline





Source: ICAO estimates

Approx. USD 4.9 to 5.1 billion loss of airline revenues for 1Q 2020 compared to Baseline

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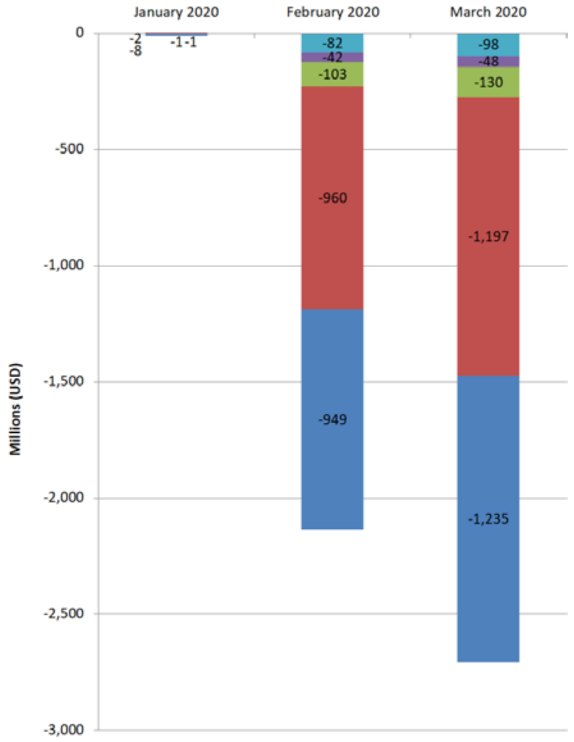
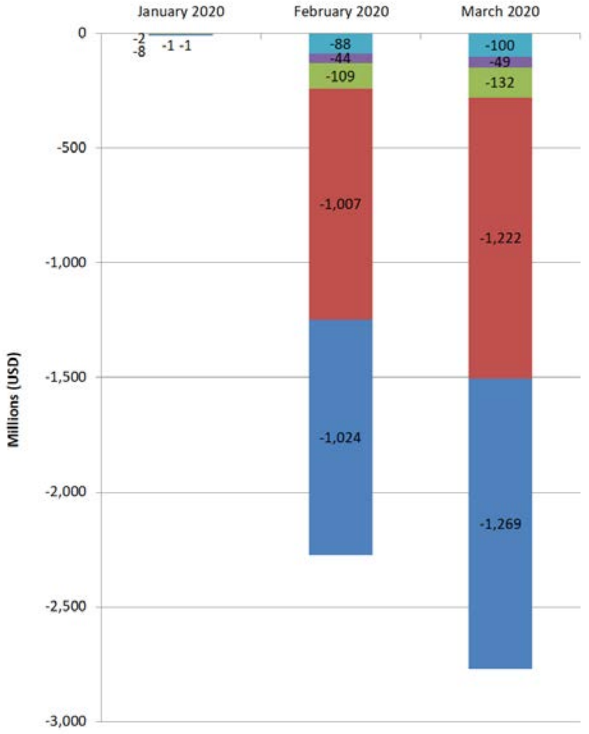
Scenario 1: USD 4.9 billion reduction



Scenario 2: USD 5.1 billion reduction



- International (Chinese carriers)
- International (Foreign carriers)
- Regional (Mainland - Hong Kong SAR)
- Regional (Mainland - Macao SAR)
- Regional (Mainland - Taiwan Province)

- 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)

Source: ICAO estimates

Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China

The estimates indicate the impact in terms of scheduled international passenger traffic from/to Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China, as well as scheduled passenger traffic among Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China, during 1Q 2020 compared to originally-planned:

- Overall reduction of **29% of seats offered by airlines**
- Overall reduction of **8.8 to 9.7 million passengers**
- Approx. **USD 2.1 to 2.3 billion potential loss** of gross operating revenues of airlines

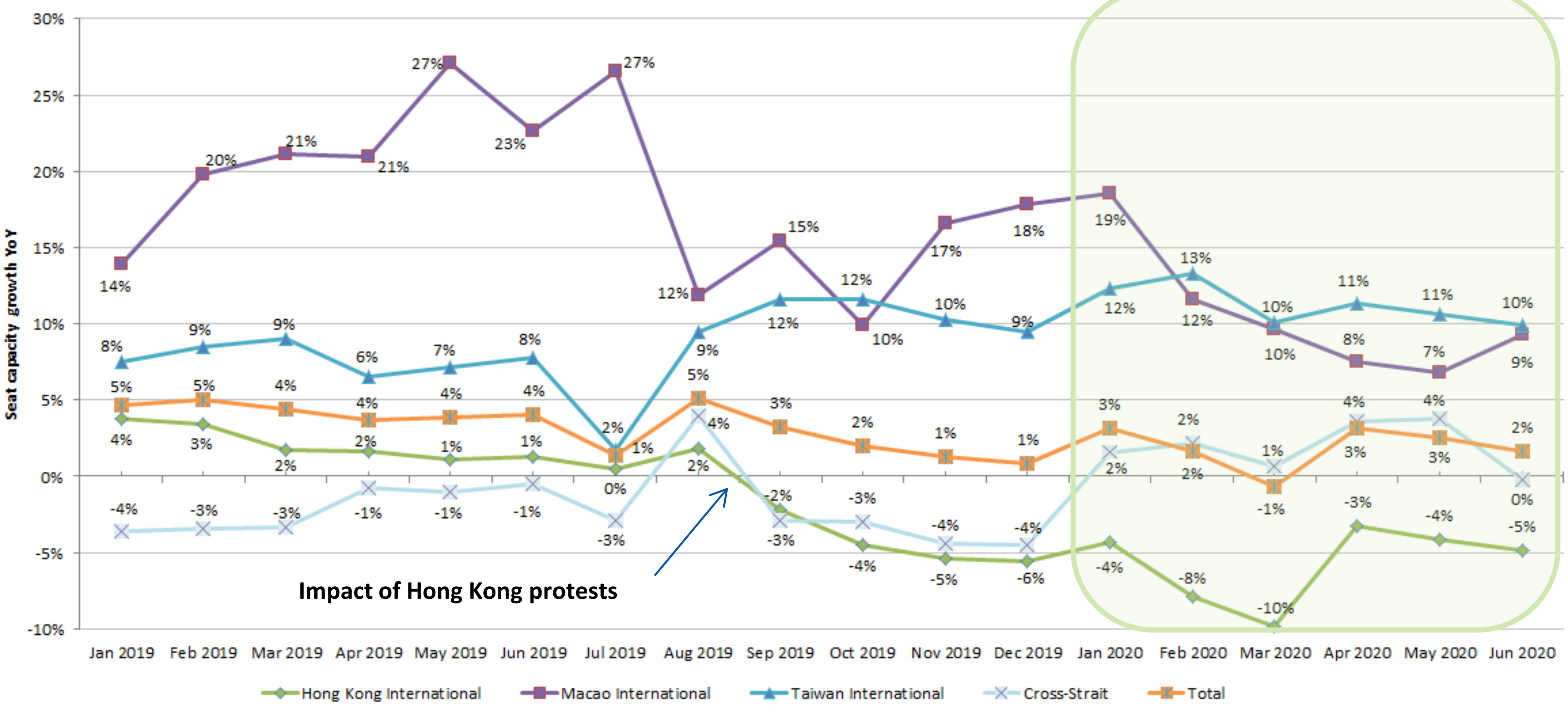
Scope of analysis: Hong Kong and Macao SARs and Taiwan Province

- **“Hong Kong International”** refers to scheduled international passenger services from/to Hong Kong Special Administrative Region (SAR) of China excluding:
  - scheduled passenger services between Hong Kong SAR of China and mainland China, Macao SAR of China and Taiwan, Province of China
- **“Macao International”** refers to scheduled international passenger services from/to Macao SAR of China excluding:
  - scheduled passenger services between Macao SAR of China and mainland China, Hong Kong SAR of China and Taiwan, Province of China
- **“Taiwan International”** refers to scheduled international passenger services from/to Taiwan, Province of China excluding:
  - scheduled passenger services between Taiwan, Province of China and mainland China, Hong Kong SAR of China and Macao SAR of China
- **“Cross-Strait”** refers to scheduled passenger services among Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China excluding:
  - “**Regional”** already included in the mainland China analysis

Scenario analysis of COVID-19 outbreak impact for 1Q 2020

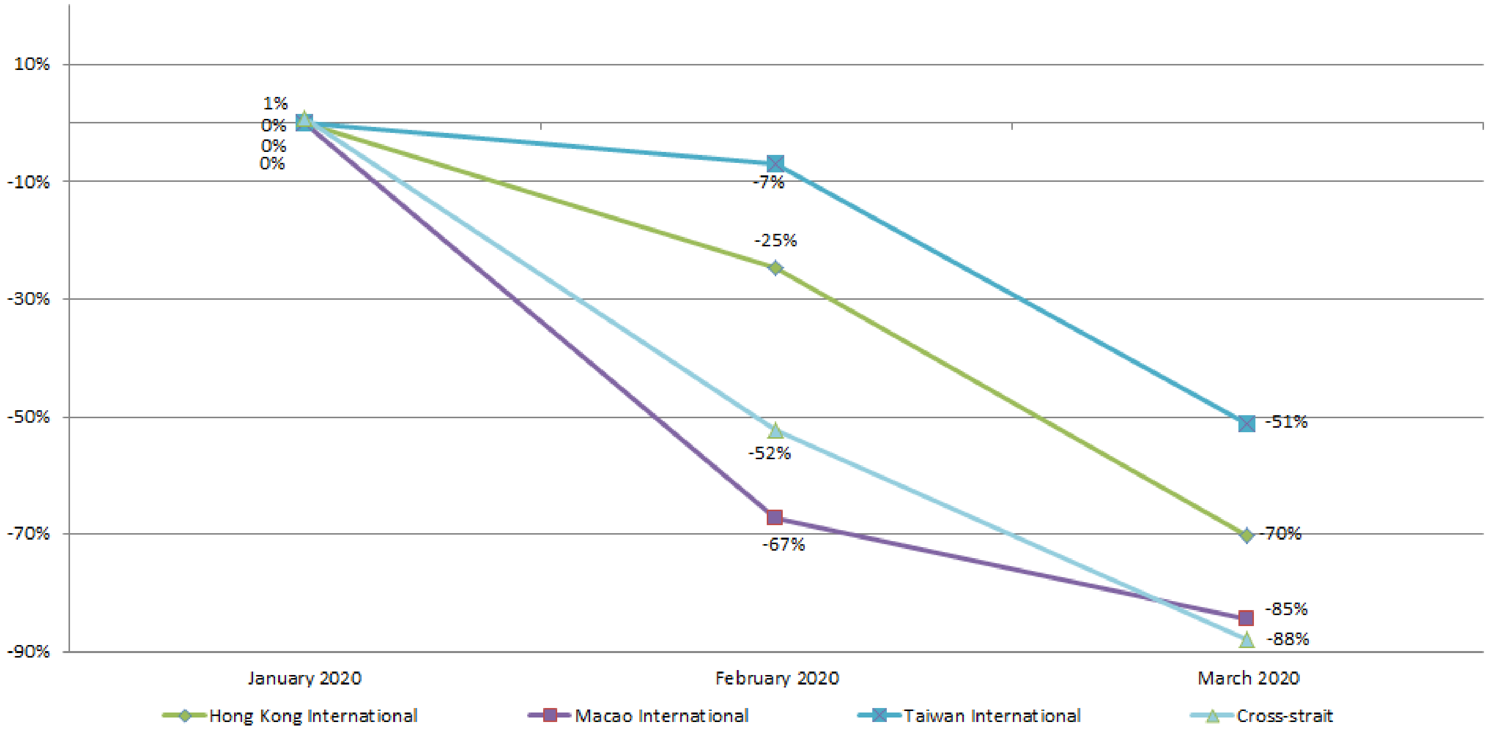
- Baseline (hypothetical situation without COVID-19 outbreak)
  - Seat capacity: used "originally-planned" winter schedule
  - Load factor: applied 80% (87% for LCCs)
- Scenario 1 (mild)
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January; 15 and 12 percentage points lower than baseline in February and March, respectively (8 and 6 percentage points lower for Taiwan; 30 and 25 percentage points lower for Cross-strait; 15 percentage points lower in March for Korea and Italy)
- Scenario 2 (severe)
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January; 25 and 22 percentage points lower than baseline in February and March, respectively (13 and 11 percentage points lower for Taiwan; 40 and 33 percentage points lower for Cross-strait; 25 percentage points lower in March for Korea, Iran and Italy)

Baseline: 2% seat capacity increase (year-on-year) for first half 2020



A total of YoY 2% seat capacity increase originally -planned for 1Q/2Q 2020 with the expectation of continued weak demand for Hong Kong SAR and Cross-strait services

Scenarios 1 & 2: 29% seat capacity reduction from Baseline



Source: ICAO estimates

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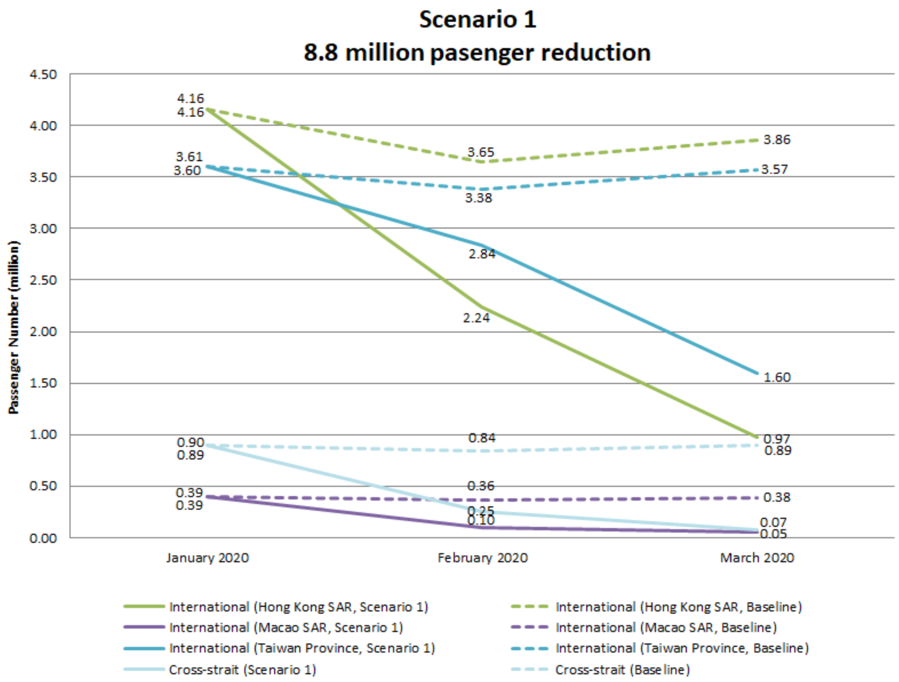
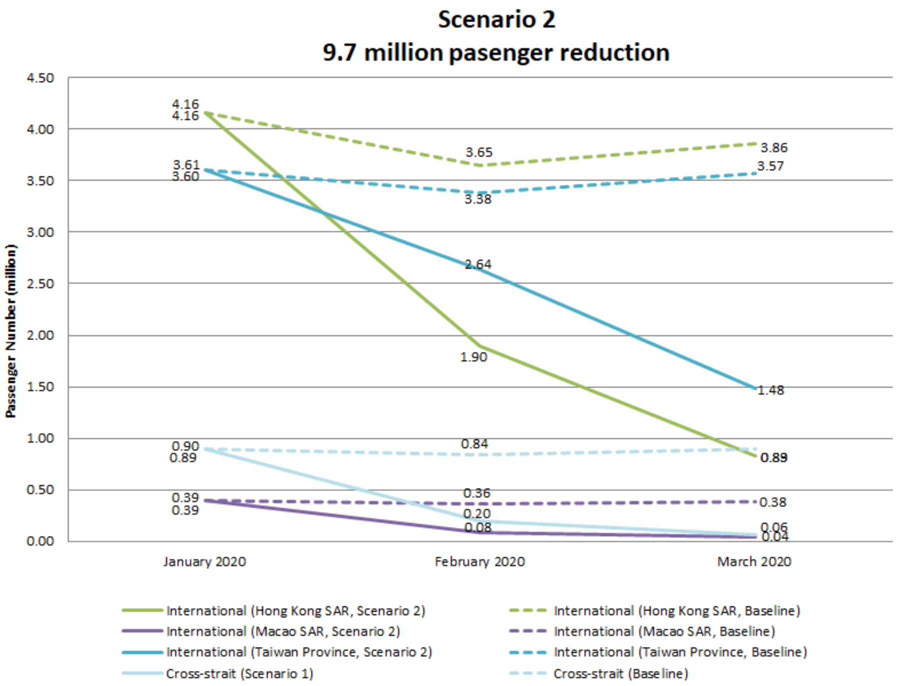
8.8 to 9.7 million passenger reduction in 1Q 2020 compared to Baseline

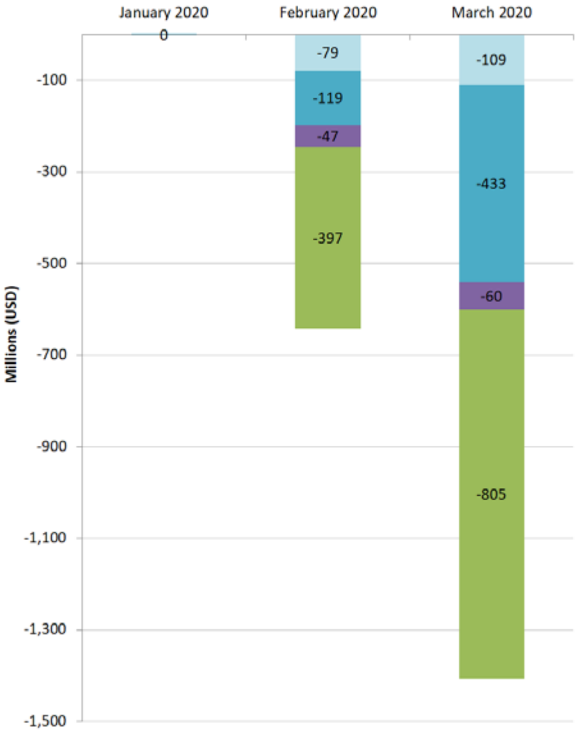




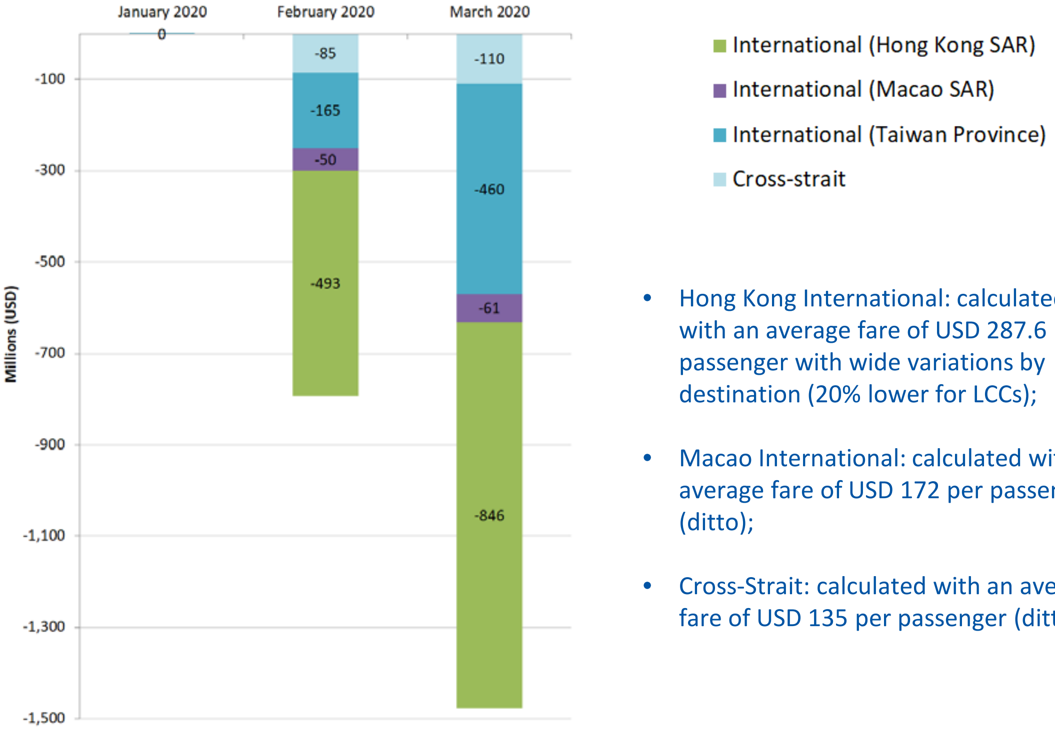
Source: ICAO estimates

Approx. USD 2.1 to 2.3 billion loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 2.1 billion reduction



Scenario 2: USD 2.3 billion reduction



- Hong Kong 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)

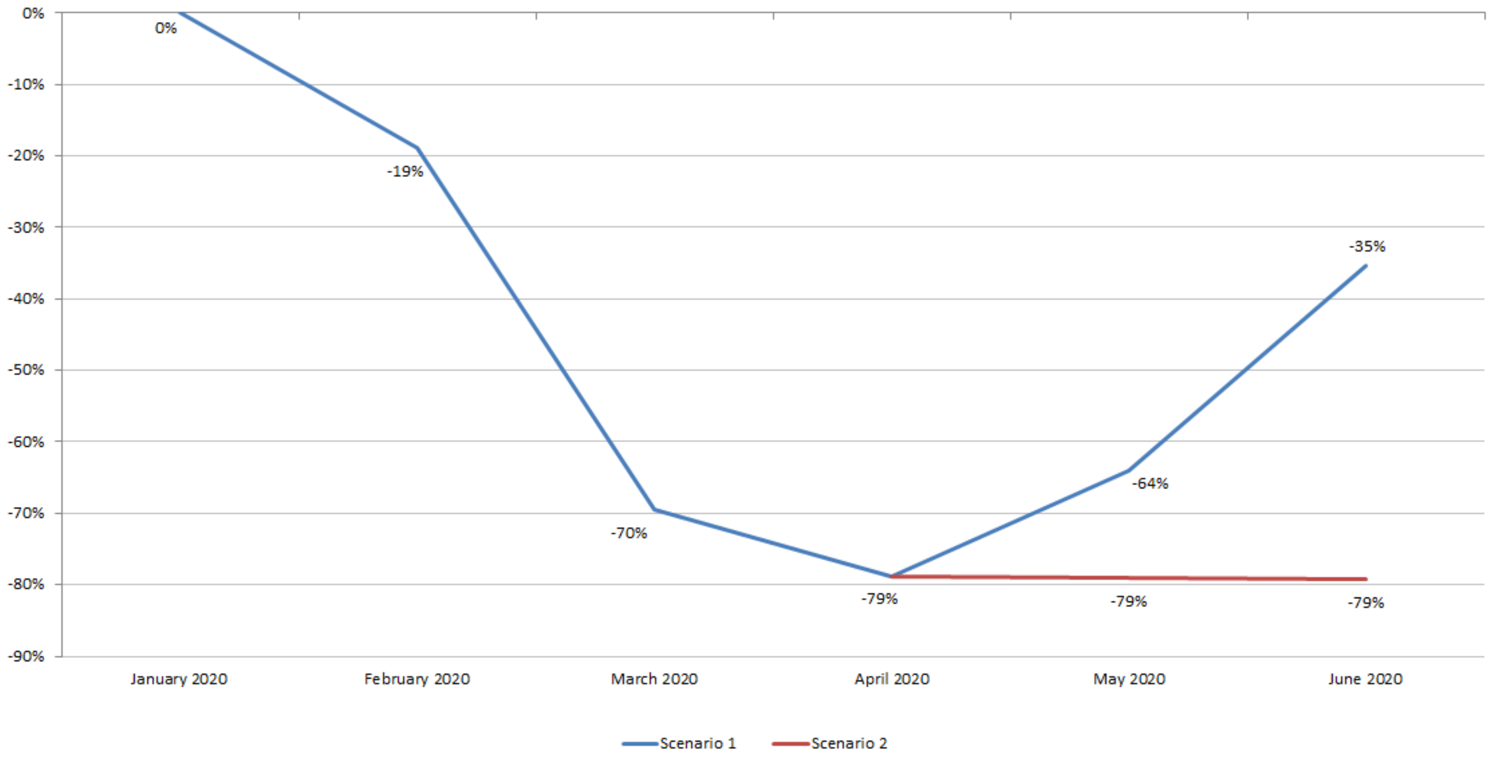
Source: ICAO estimates

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 **44 to 54% of seats offered by airlines**
- Overall reduction of **22 to 28 million passengers**
- Approx. **USD 5.5 to 5.6 billion potential loss** of gross operating revenues of airlines

44 to 54 % seat capacity reduction in first half 2020 from Baseline

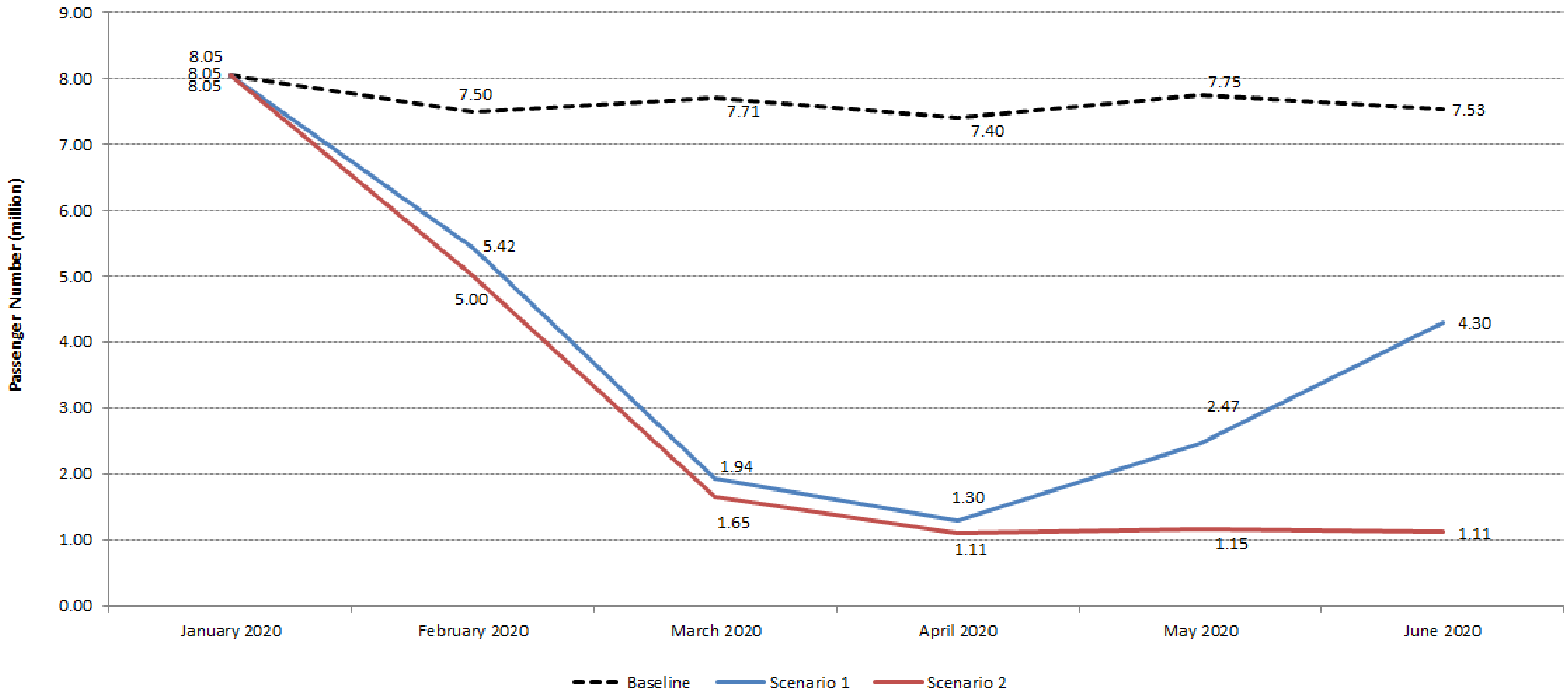


COVID-19 has started to impact airline operations from late February 2020 (except China routes)

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

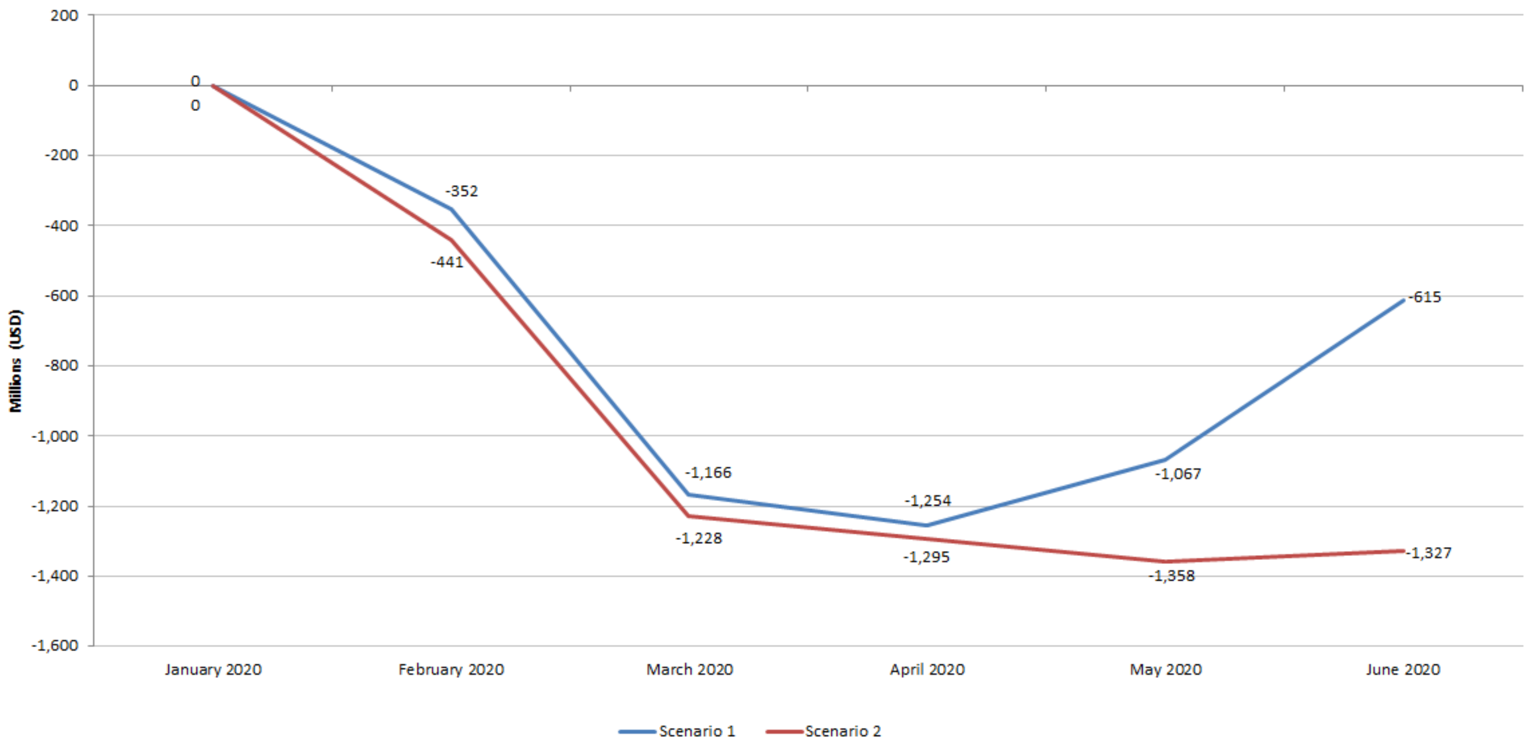
Source: ICAO estimates based on OAG, Routes Online and airline websites

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



Source: ICAO estimates

Approx. USD 4.5 to 5.6 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

Scenario assumptions

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

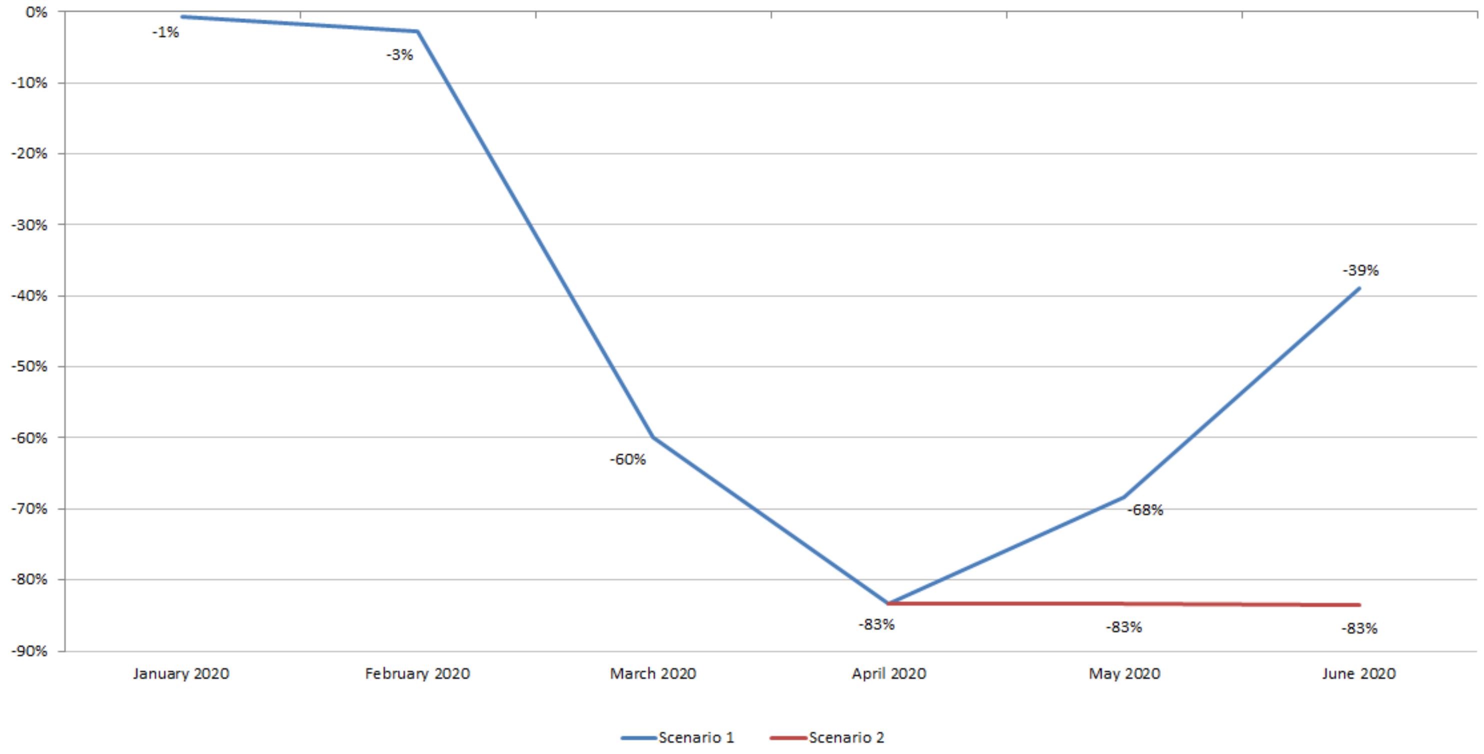
Italy

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 **46 to 58% of seats offered by airlines**
- Overall reduction of **31 to 39 million passengers**
- Approx. **USD 3.8 to 4.8 billion potential loss** of gross operating revenues of airlines

ICAO UNITING AVIATION

46 to 58 % seat capacity reduction in first half 2020 from Baseline

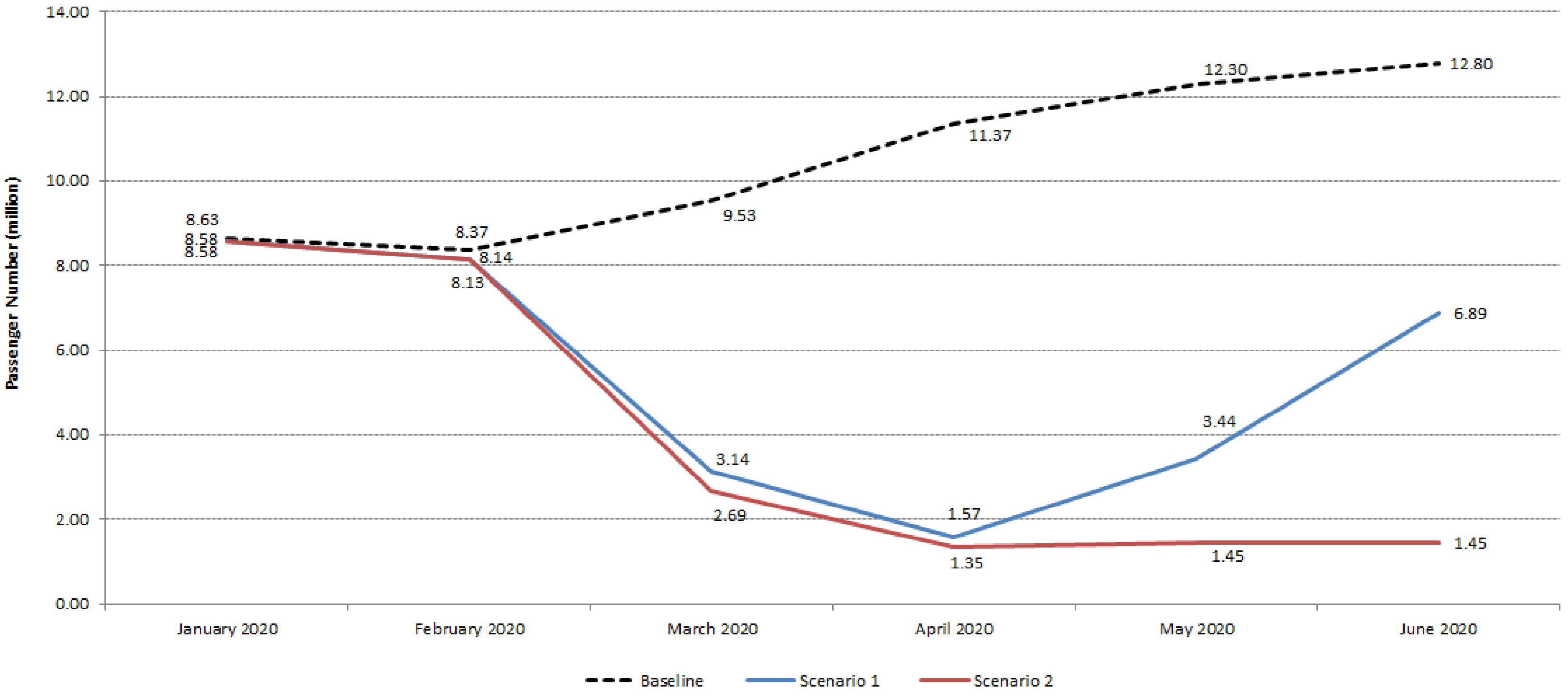


COVID-19 has started to impact airline operations from late February 2020 (except China routes)

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

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

31 to 39 million passenger reduction in first half 2020 compared to Baseline



Source: ICAO estimates

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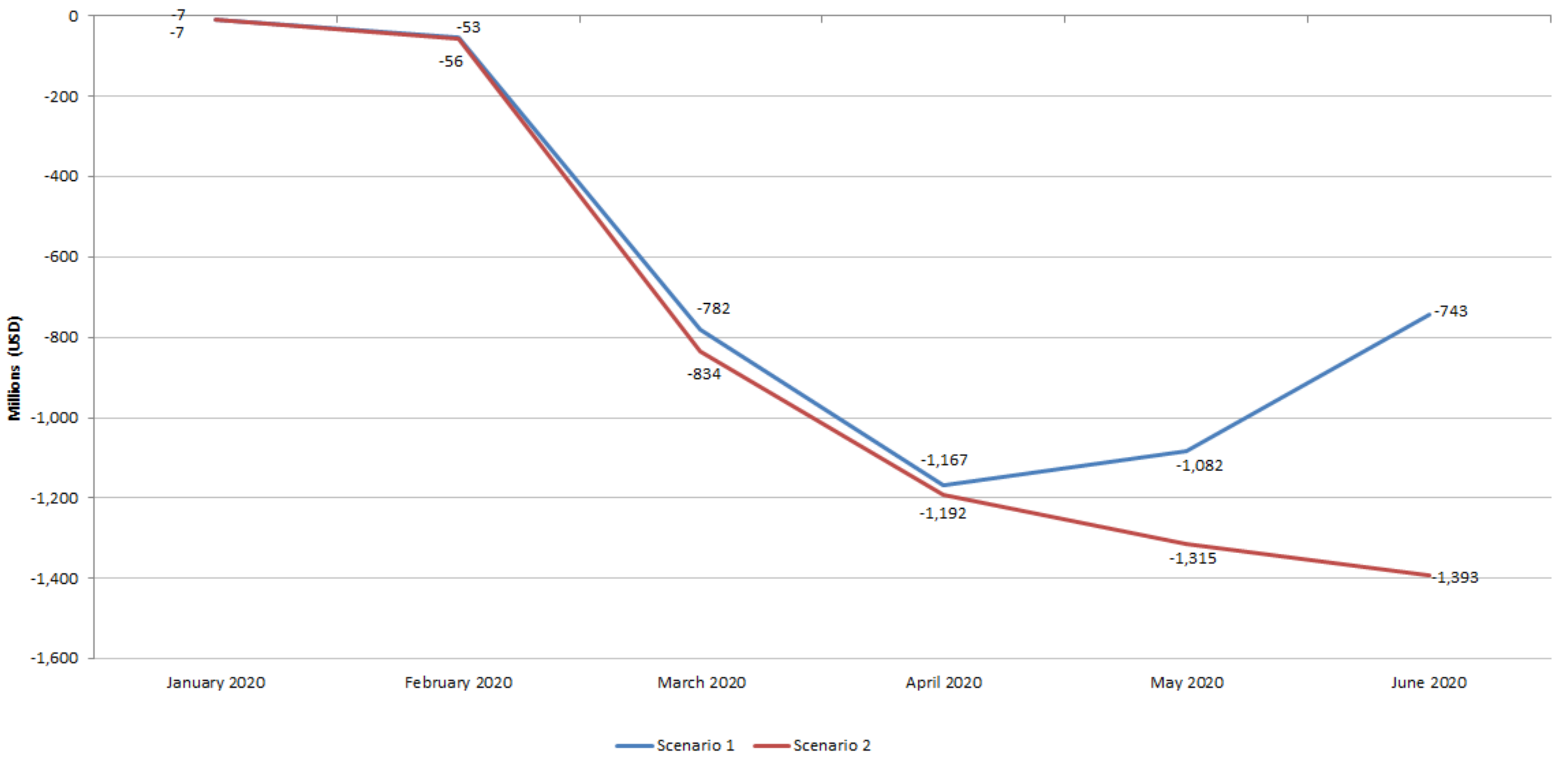
Approx. USD 3.8 to 4.8 billion loss of airline revenues in first half 2020 compared to Baseline



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

Source: ICAO estimates

Scenario assumptions

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 25 percentage points more contraction from March reduction rate, and will be updated by actual (estimated) once available	15 percentage points lower than Baseline	maximum 25 percentage points more contraction from March reduction rate, and will be updated by actual (estimated) once available	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, and will be updated by actual (estimated) once available	10 percentage points lower than Baseline	same reduction rate as April, and will be updated by actual (estimated) once available	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, and will be updated by actual (estimated) once available	10 percentage points lower than Baseline	same reduction rate as May, and will be updated by actual (estimated) once available	25 percentage points lower than Baseline

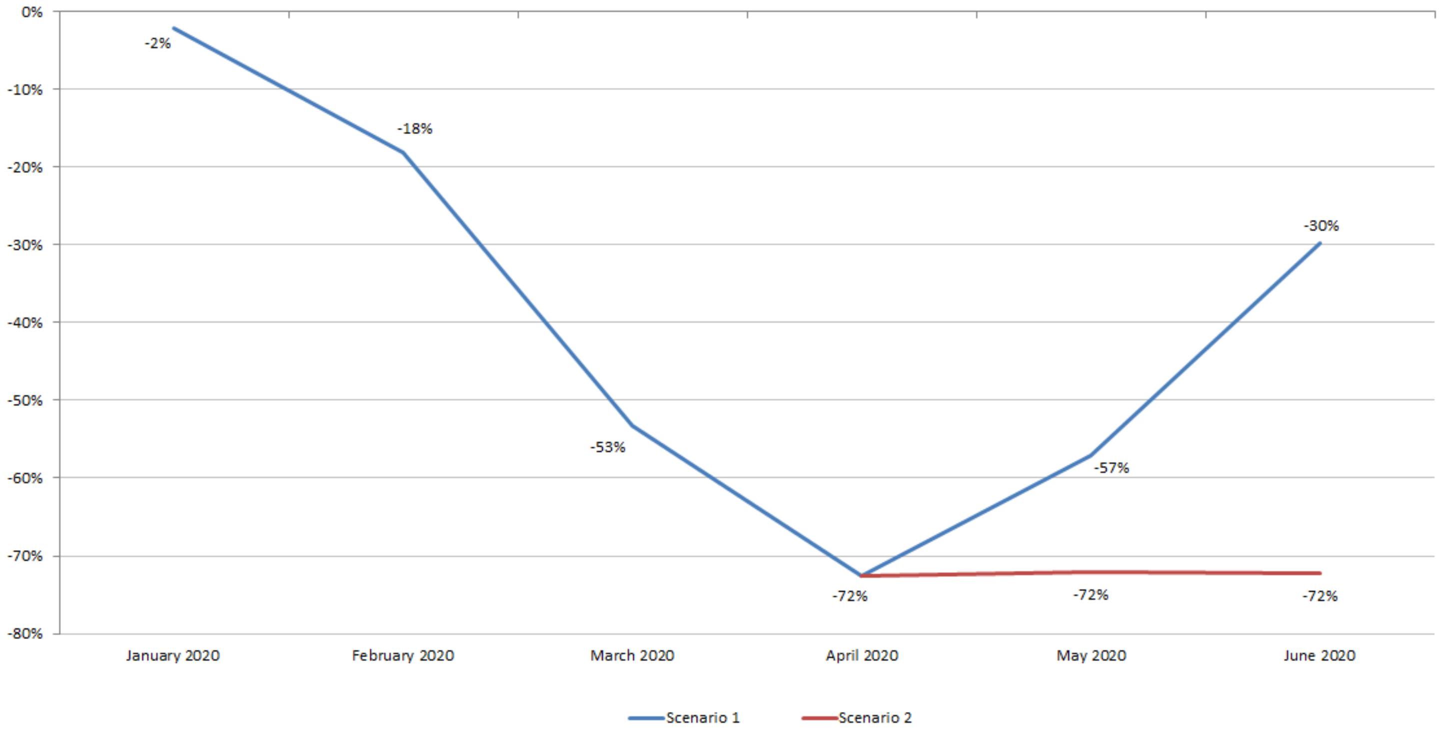
Iran (Islamic Republic of)

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 **39 to 49% of seats offered by airlines**
- Overall reduction of **2.2 to 2.8 million passengers**
- Approx. **USD 350 to 450 million potential loss** of gross operating revenues of airlines

ICAO UNITING AVIATION

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

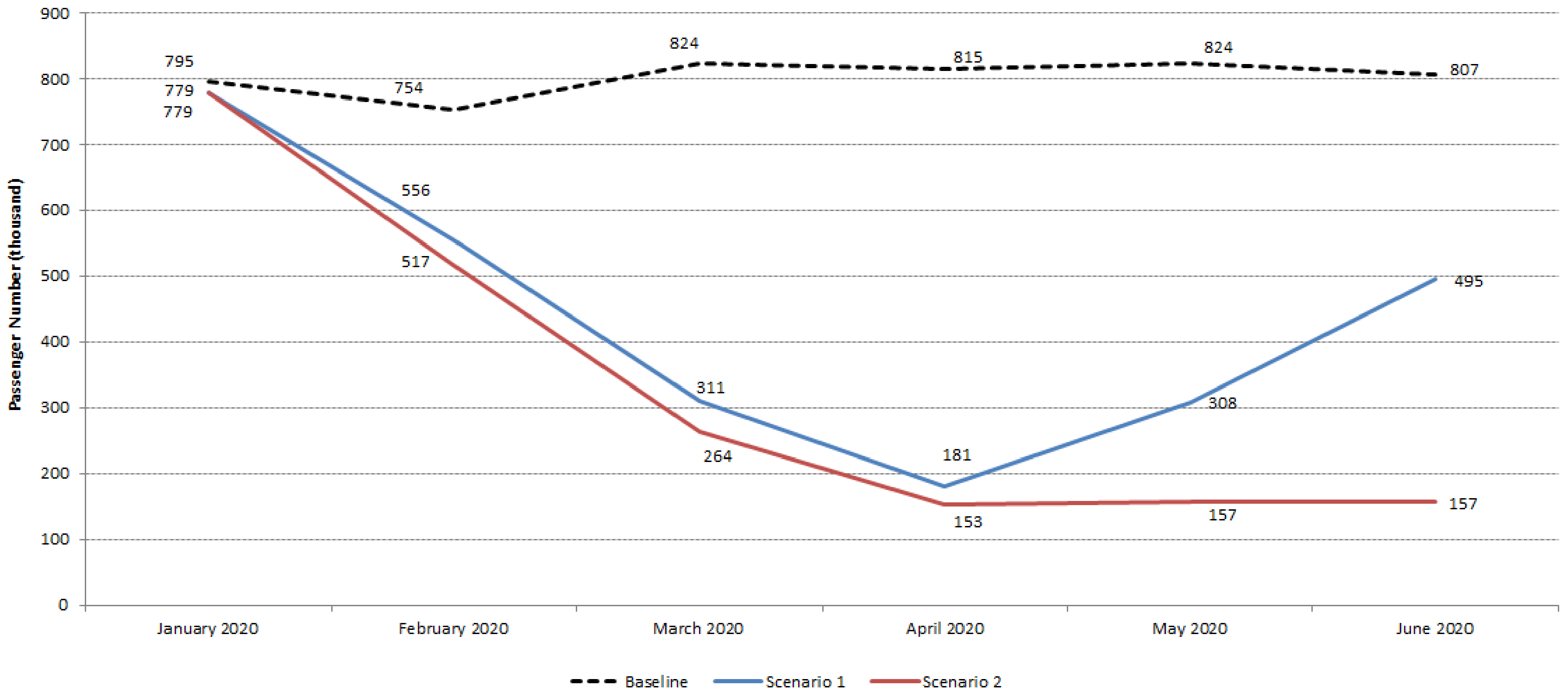


COVID-19 has started to impact airline operations from late February 2020 (except China routes)

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

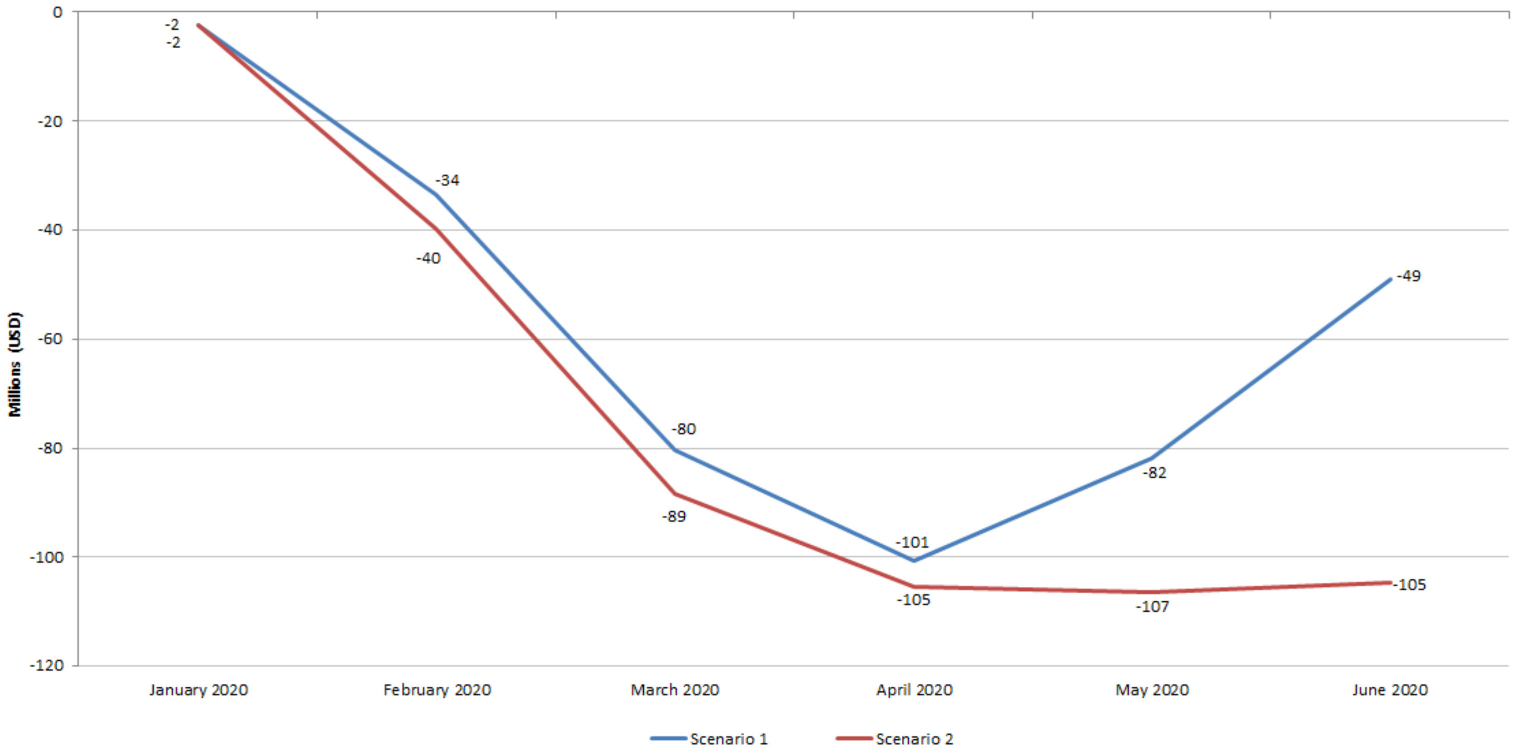
Source: ICAO estimates based on OAG, Routes Online and airline websites

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



Source: ICAO estimates

Approx. USD 350 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

Scenario assumptions

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 20 percentage points more contraction from March reduction rate, and will be updated by actual (estimated) once available	15 percentage points lower than Baseline	maximum 20 percentage points more contraction from March reduction rate, and will be updated by actual (estimated) once available	25 percentage points lower than Baseline
May 2020	0%	80% (except 78% Chinese carriers, 87% all LCCs)	10 percentage points improvement from April reduction rate, and will be updated by actual (estimated) once available	10 percentage points lower than Baseline	same reduction rate as April, and will be updated by actual (estimated) once available	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, and will be updated by actual (estimated) once available	10 percentage points lower than Baseline	same reduction rate as May, and will be updated by actual (estimated) once available	25 percentage points lower than Baseline

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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

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