ICAO UNITING AVIATION

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

Montréal, Canada
18 March 2020

Contents

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

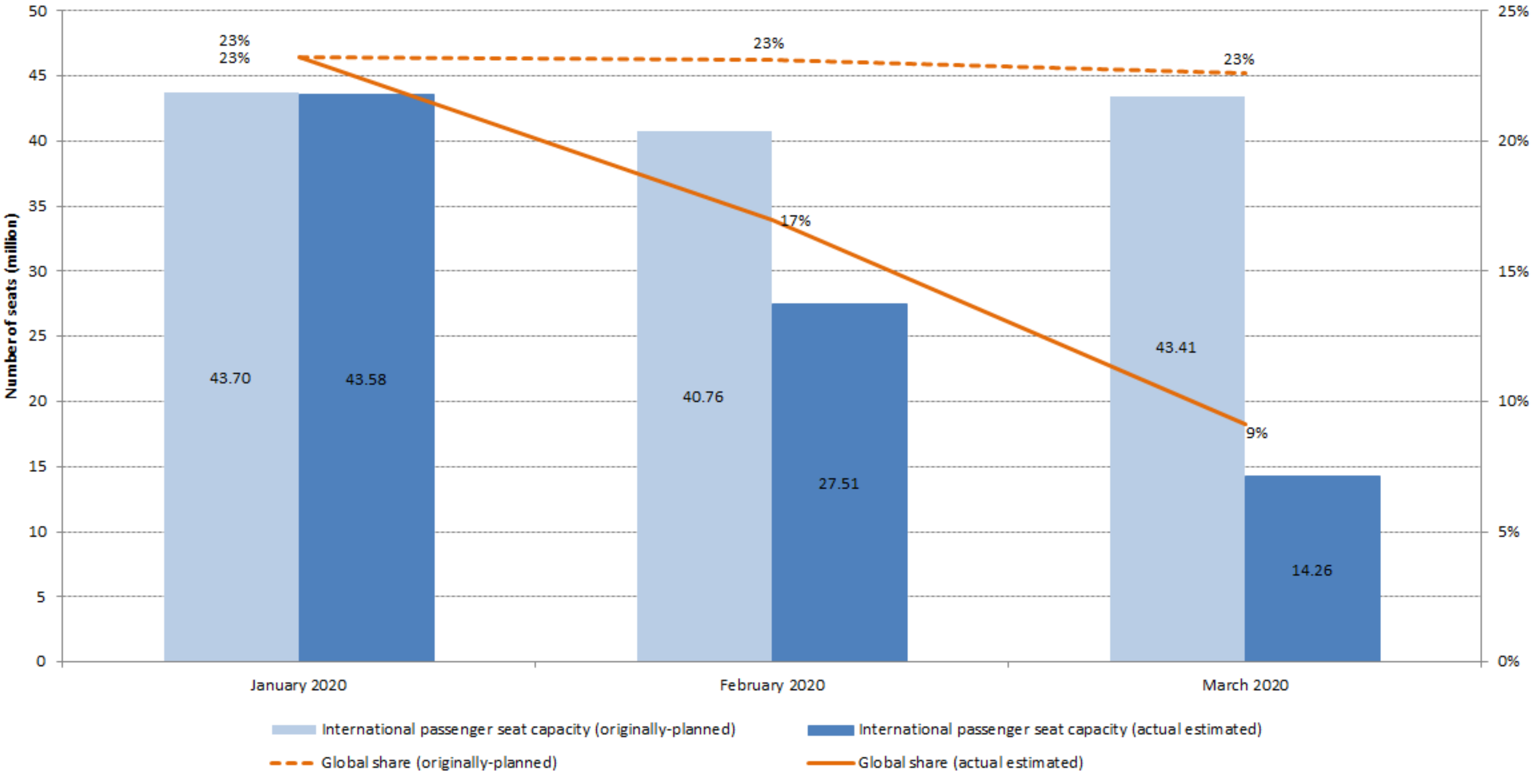
Estimated impact of COVID-19 outbreak on scheduled **international passenger** traffic during **1Q 2020** compared to originally-planned:

- **China (including Hong Kong/Macao SARs and Taiwan Province)**: 39% seat capacity reduction, 29.9 to 31.9 million passenger reduction, USD 6.7 to 7.2 billion loss of gross operating revenues of airlines
- **Republic of Korea**: 29% seat capacity reduction, 7.8 to 8.5 million passenger reduction, USD 1.5 to 1.7 billion loss of gross operating revenues of airlines
- **Italy**: 22% seat capacity reduction, 6.5 to 6.7 million passenger reduction, USD 0.8 to 0.9 billion loss of gross operating revenues of airlines
- **Iran (Islamic Republic of)**: 25% seat capacity reduction, 600,000 to 640,000 passenger reduction, USD 92 to 100 million loss of gross operating revenues of airlines

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

ICAO UNITING AVIATION

Global capacity share of 4 States dropped from 23% in January to 9% in March 2020

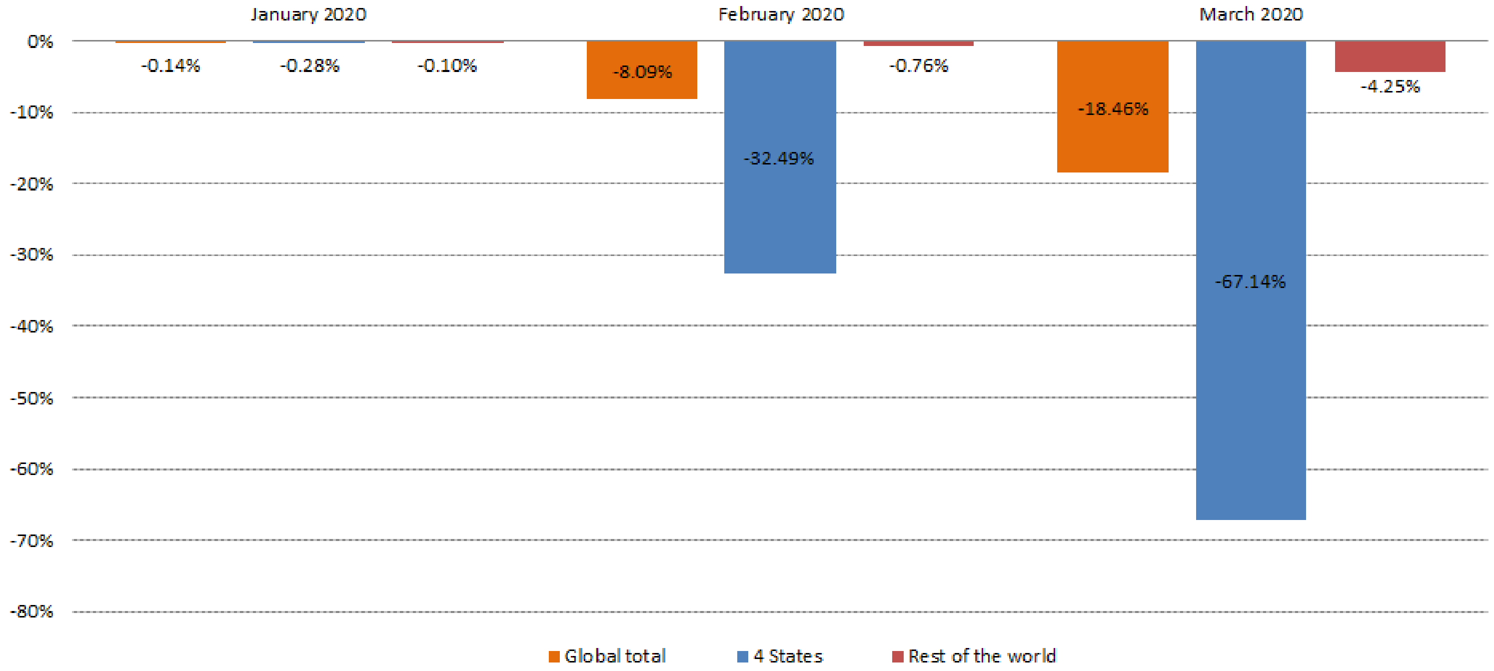


- Number of seats offer by airlines for scheduled international passenger traffic;
- 4 States combined with the exclusion of route overlaps

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

4 States have represented a significant portion of international capacity reduction in 1Q 2020

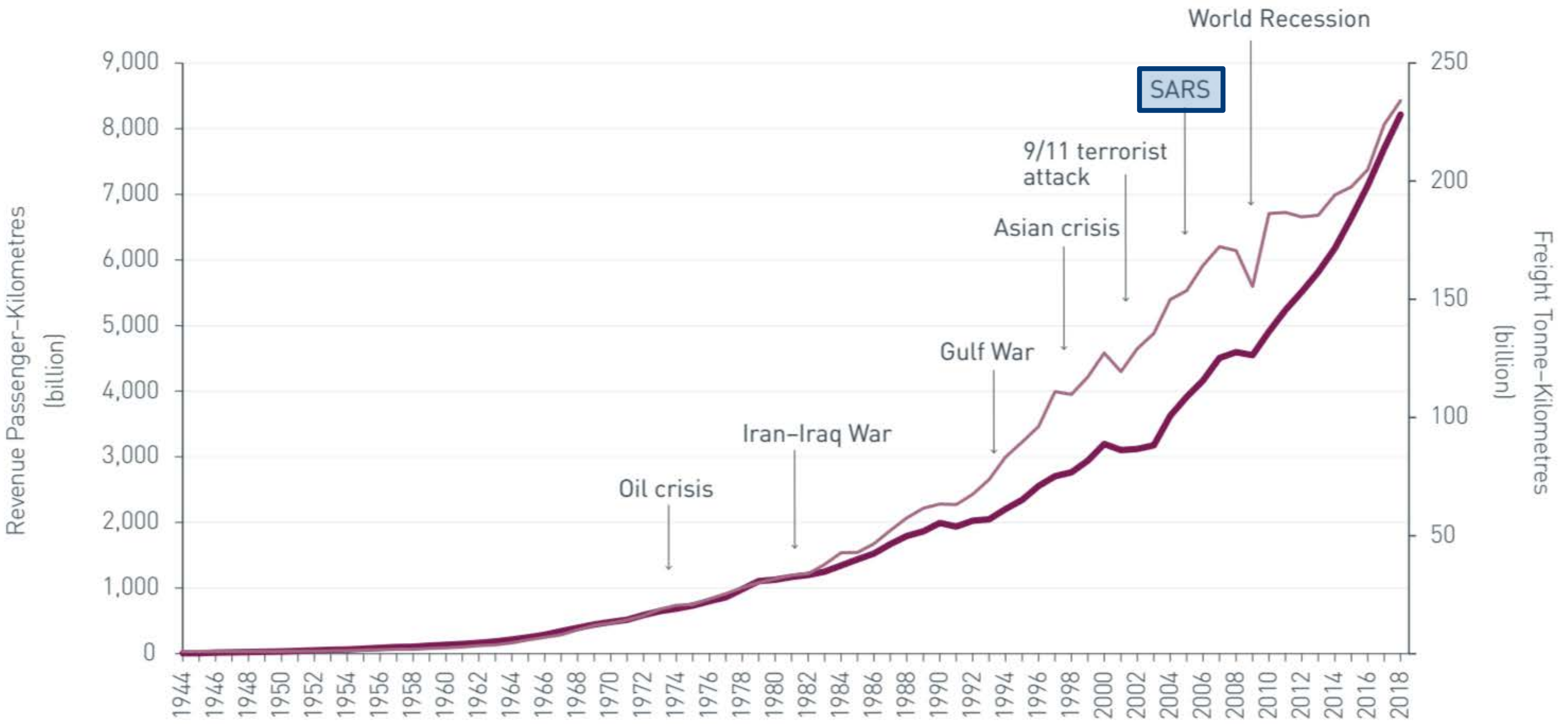
Reduction of international passenger seat capacity from originally-planned



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

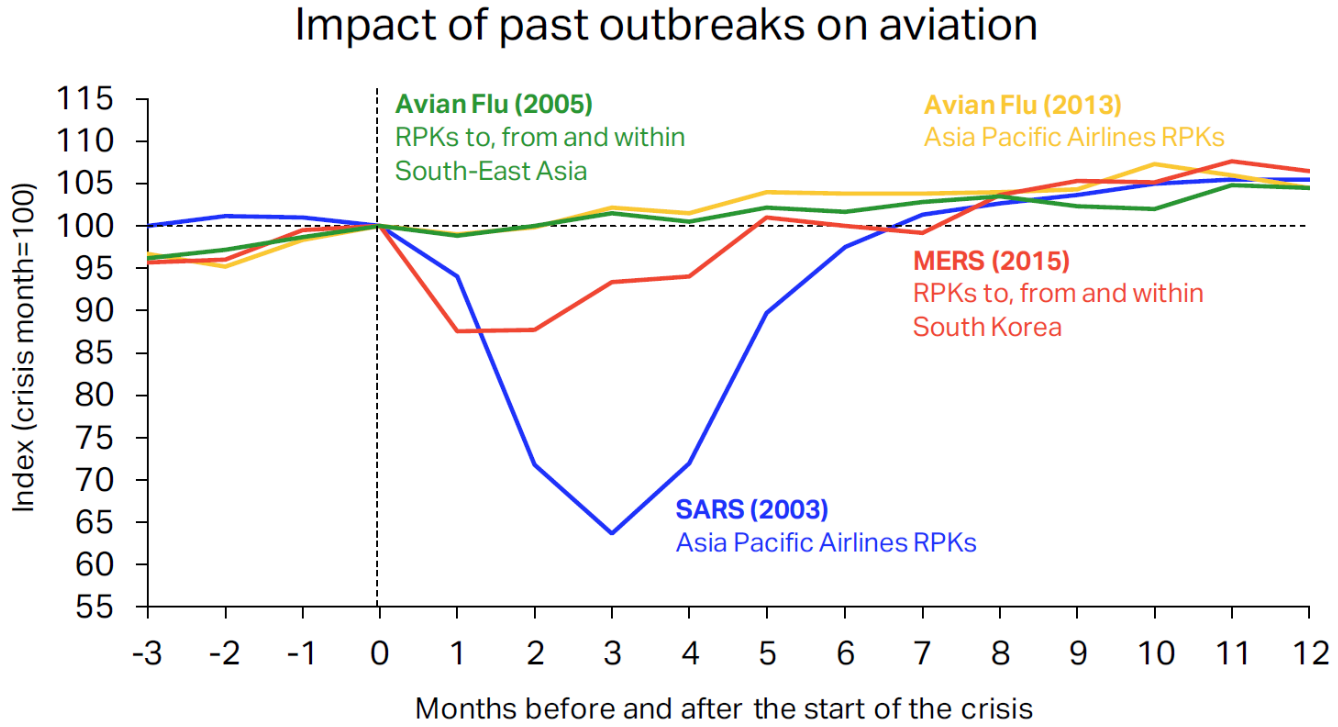
Introduction and Background

Air traffic has been vulnerable to external factors including disease outbreaks



Scheduled commercial traffic
Total (international and domestic) services

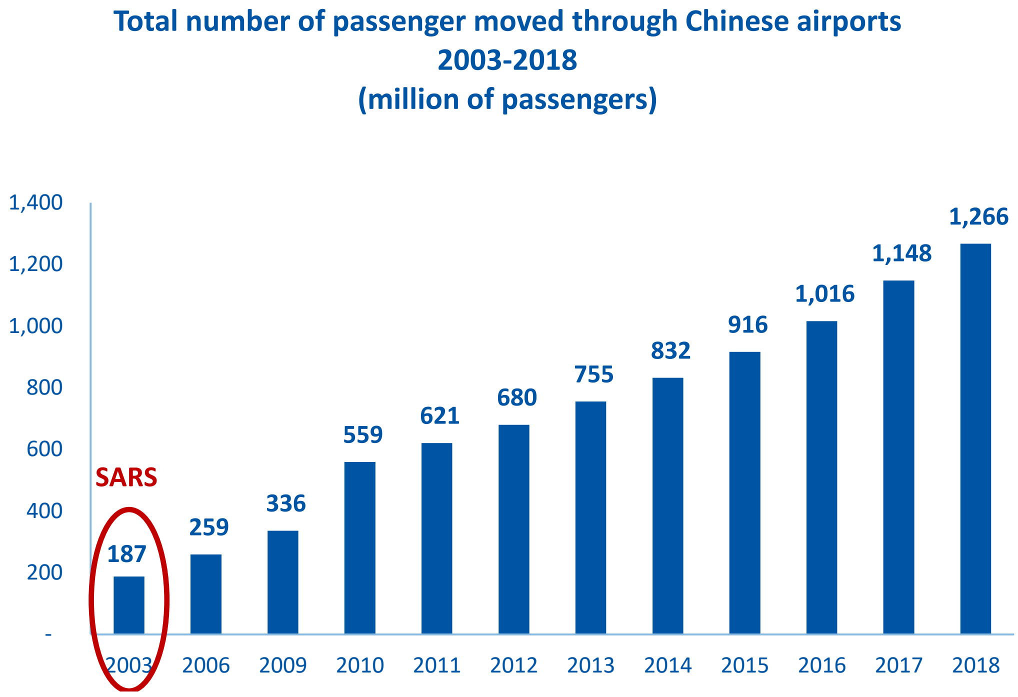
What can we learn from past experience? SARS, Aviation flu and MERS

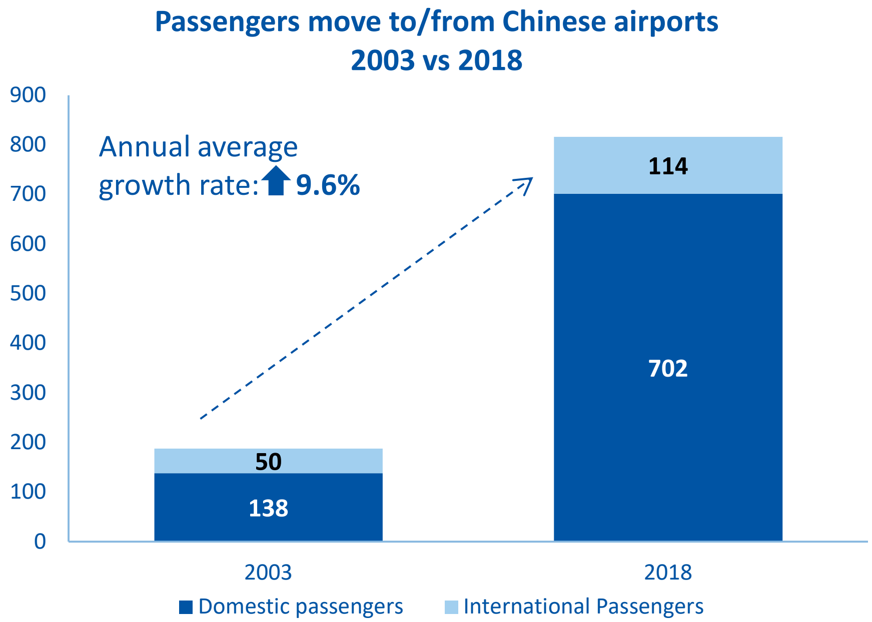


Source: IATA Economics

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**.

Chinese international traffic more than doubled since 2003 SARS spread

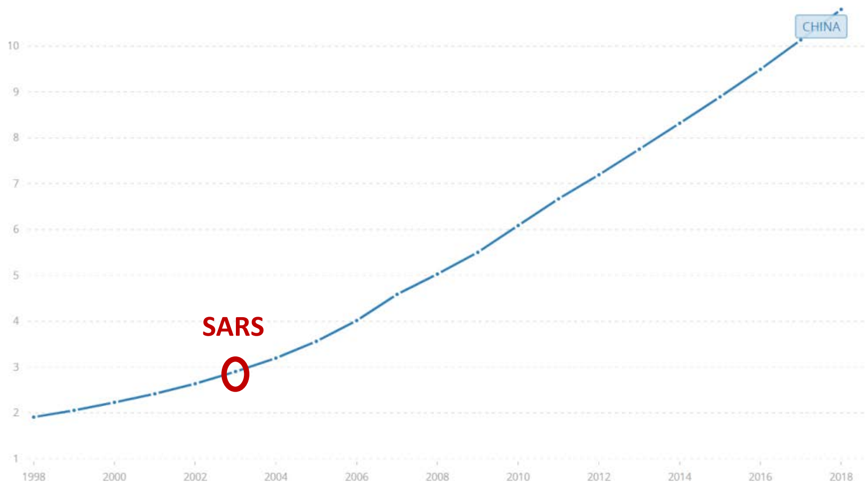




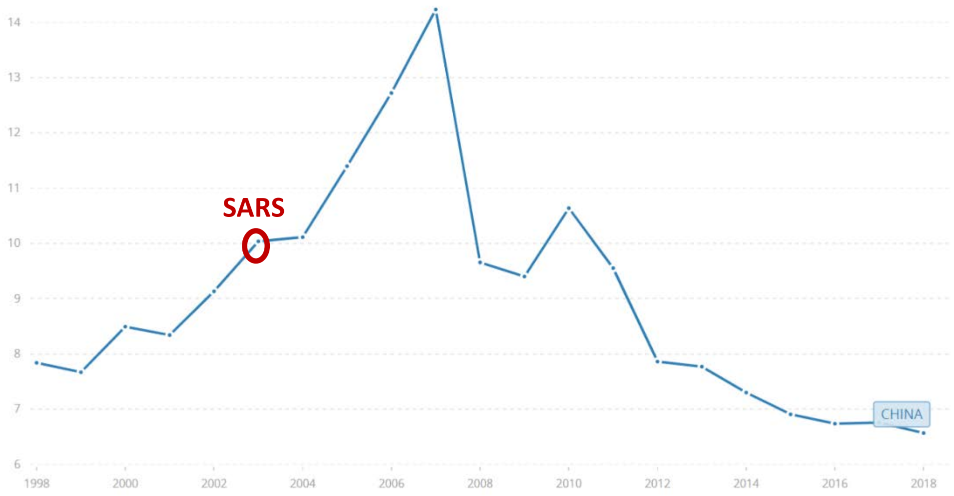
Source: ICAO-ACI Airport traffic data

Chinese economic size quadrupled since 2003 but growth rate slowed down

GDP of China (constant 2010 USD, trillion)

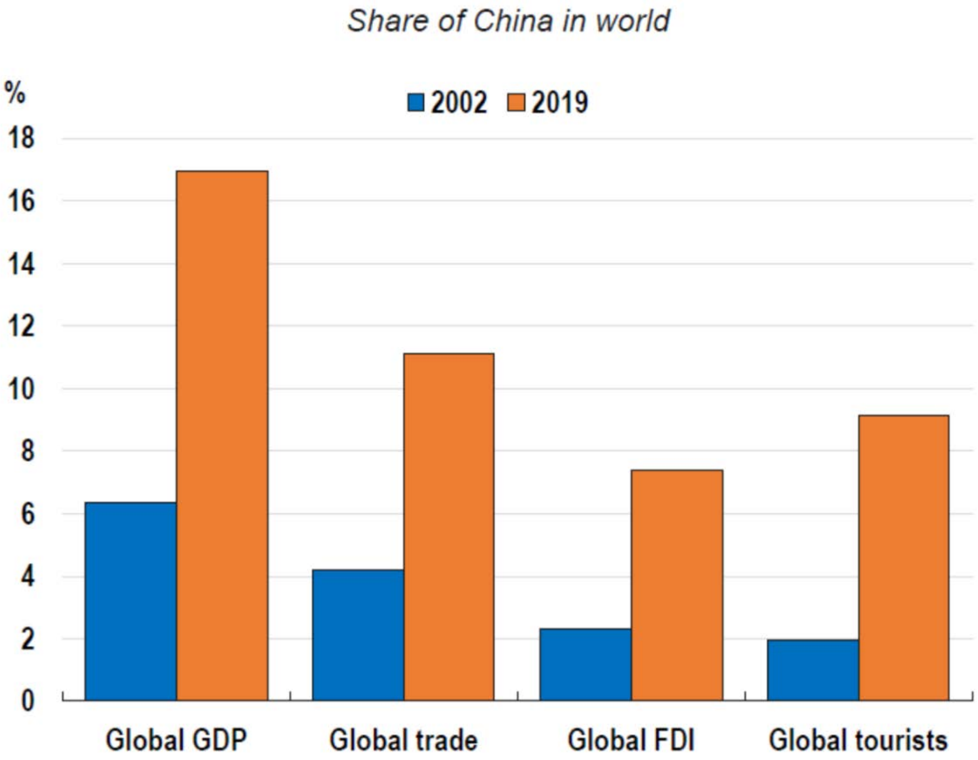


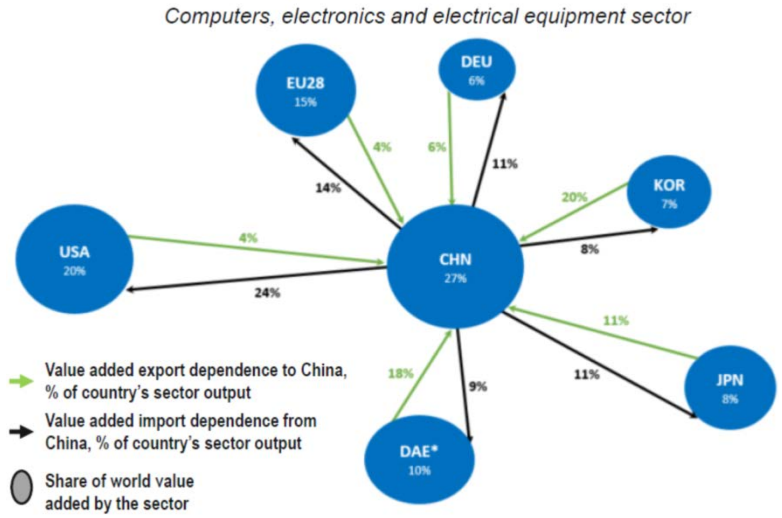
GDP Annual Growth of China (%)



Source: World Bank Group

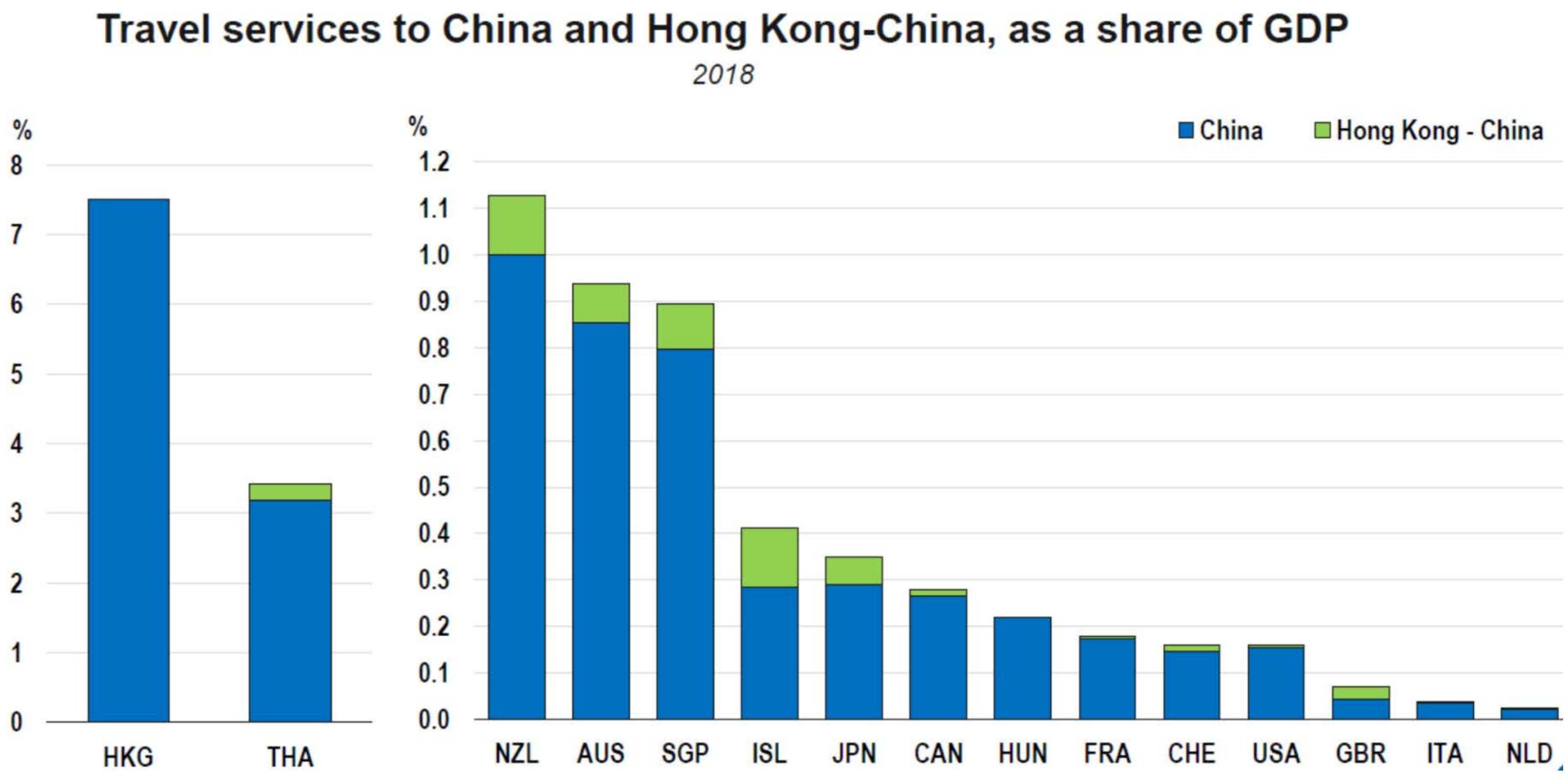
China is more integrated in the global economy





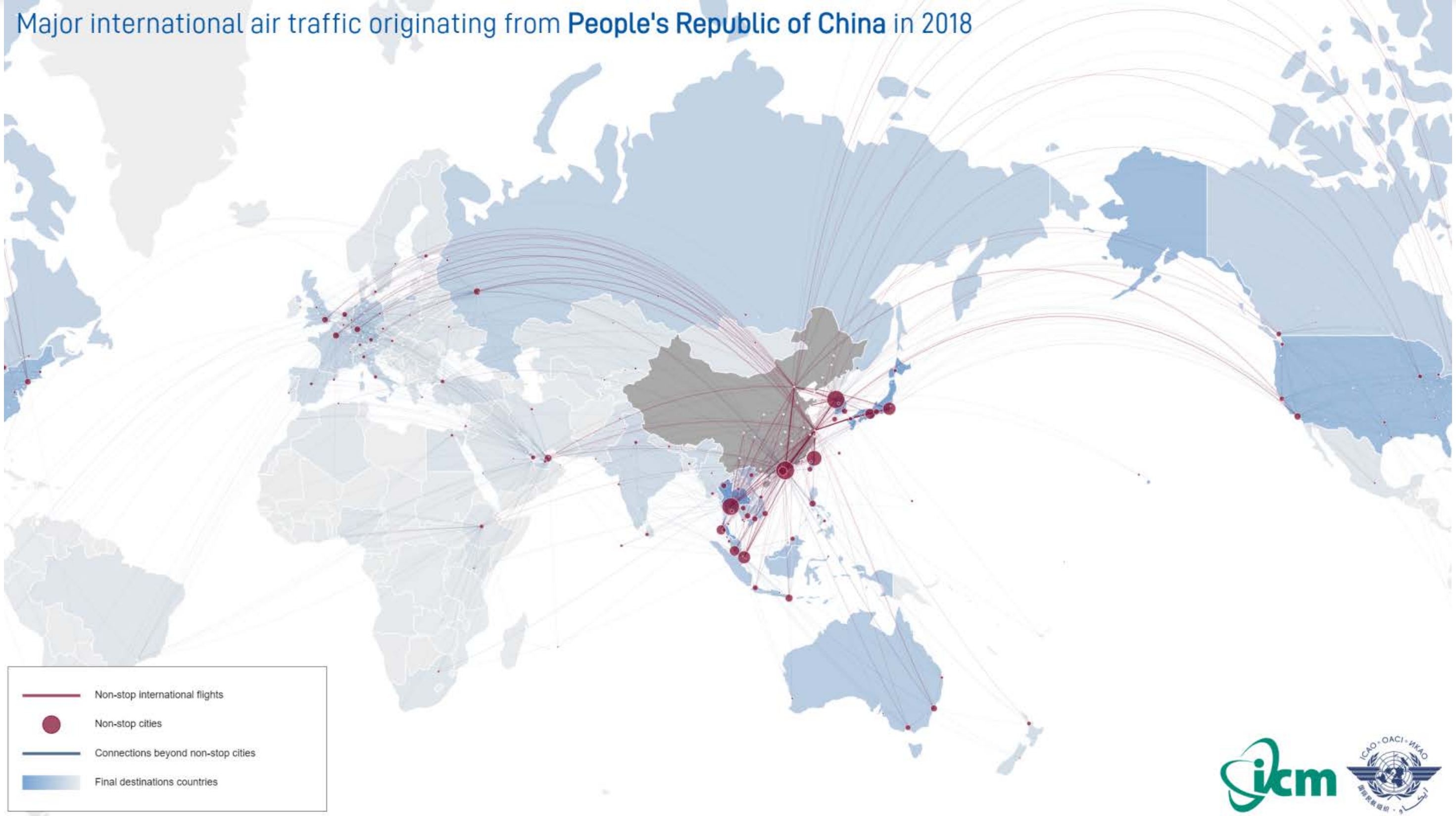
Value added trade flows between China and key partners

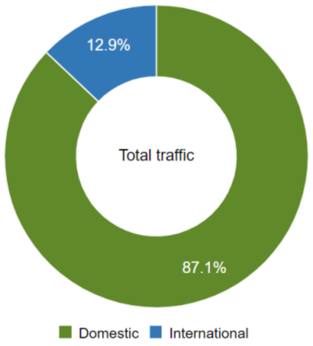
The drop in Chinese travellers will hit hard

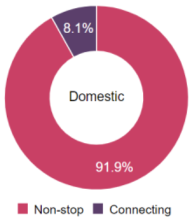


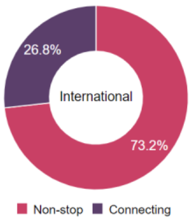
Source: OECD Interim Economic Outlook dated 2 March 2020

Air connectivity of China in terms of O-D passenger movement







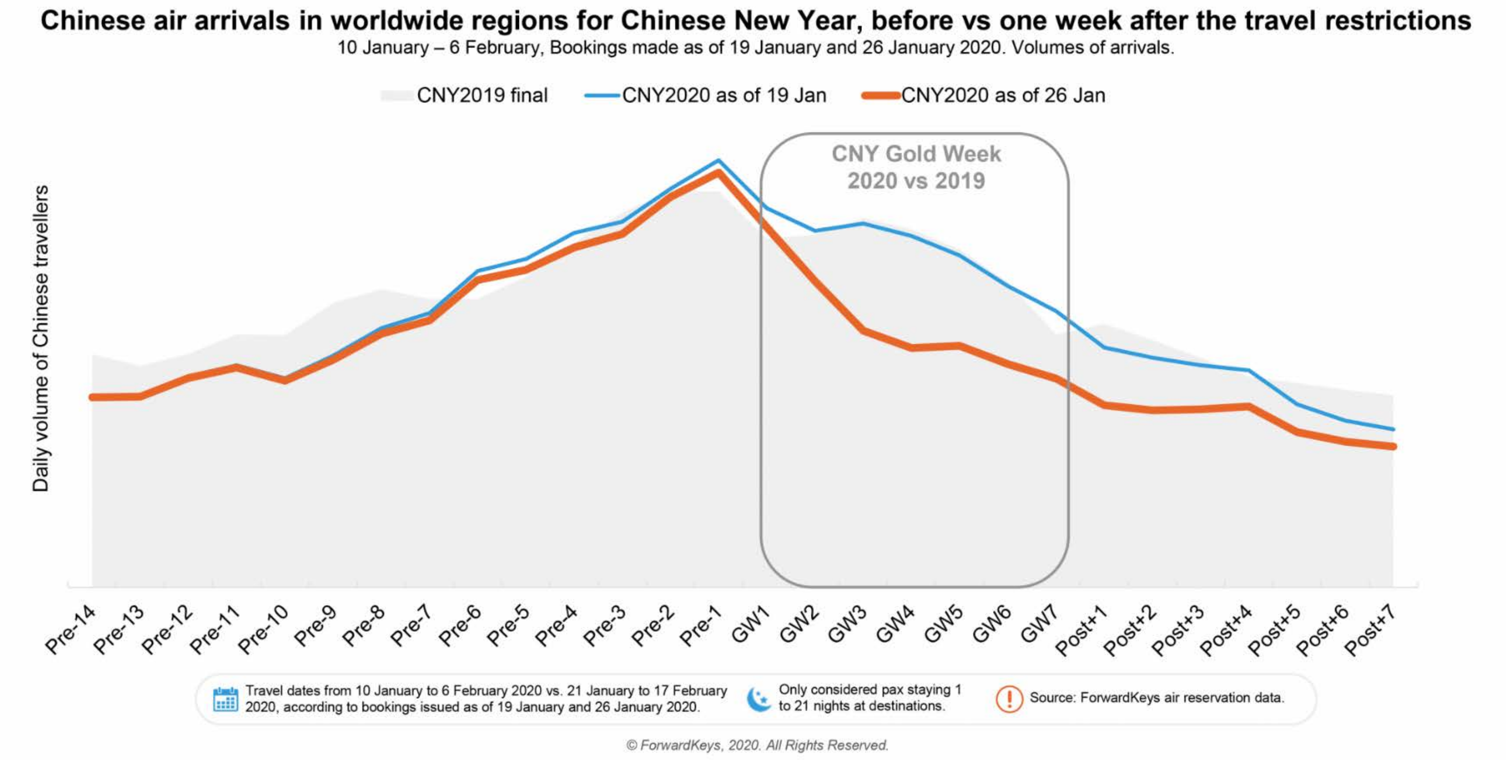


Source: ICAO-ICM MIDT data

Air connectivity of Wuhan airport in terms of O-D passenger movement

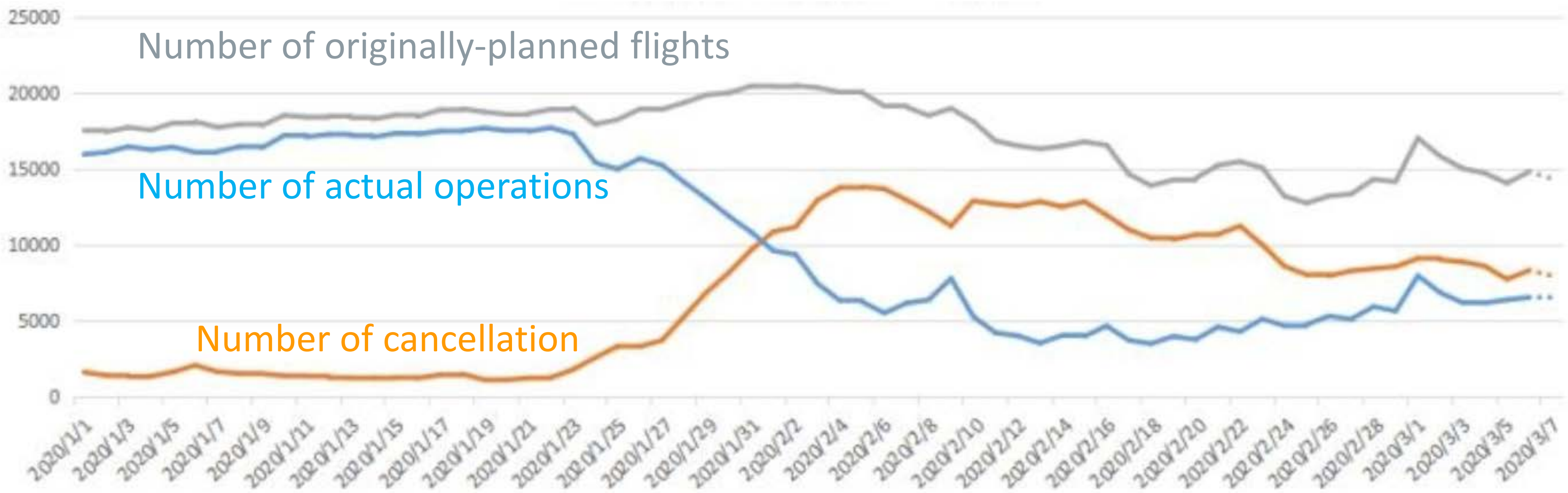
24,073,870
Total traffic

COVID-19 outbreak caused a substantial setback in flight bookings for Chinese New Year



Source: forwardkeys.com

Flight cancellation has exceeded actual operations since 31 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)

Scenario Analysis:
Mainland China

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

Scope of analysis: Mainland China

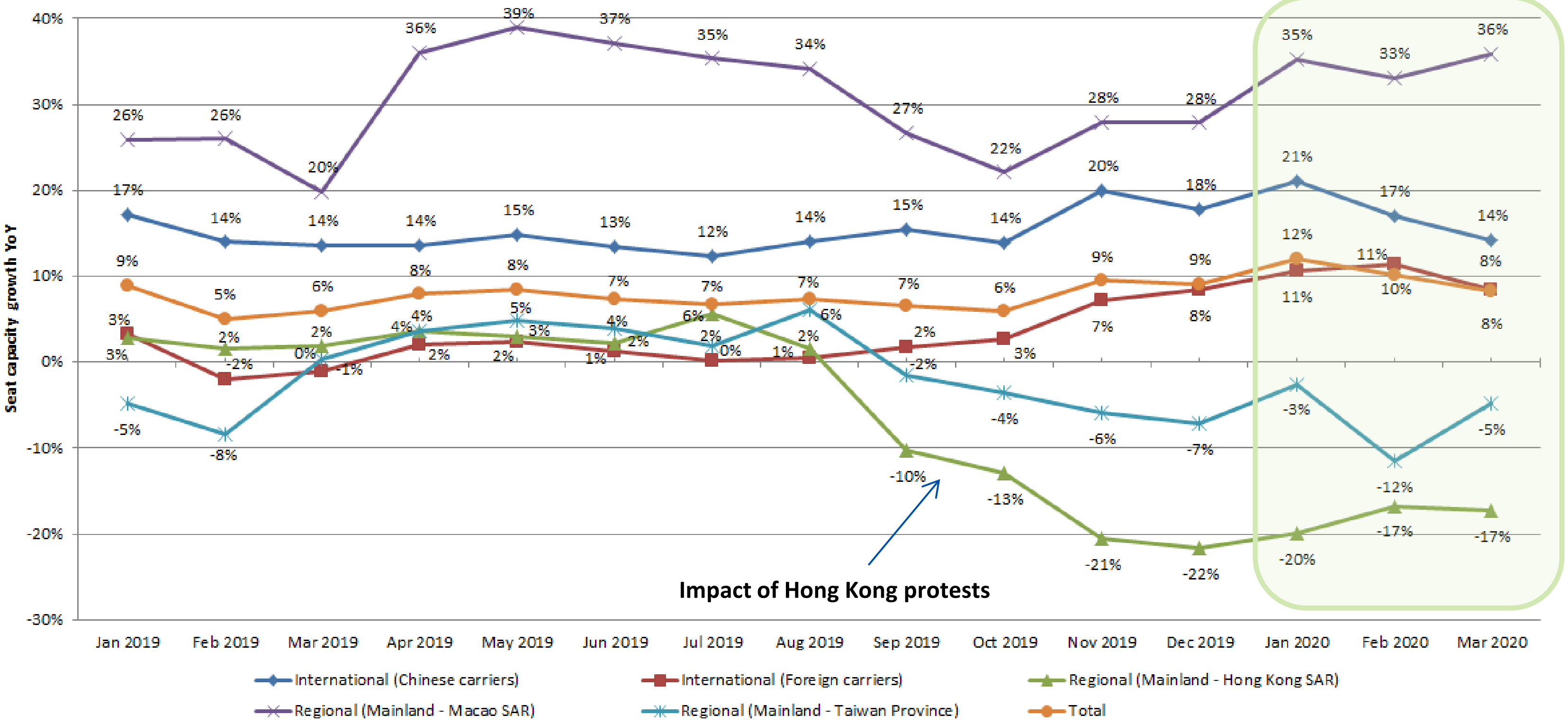
- **“International”** refers to scheduled international passenger services from/to mainland China excluding:
  - scheduled passenger services between mainland China and Hong Kong Special Administrative Region (SAR) of China, Macao SAR of China and Taiwan, Province of China; and
  - scheduled international 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 (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 (25 percentage points lower in March for Korea, Iran and Italy)

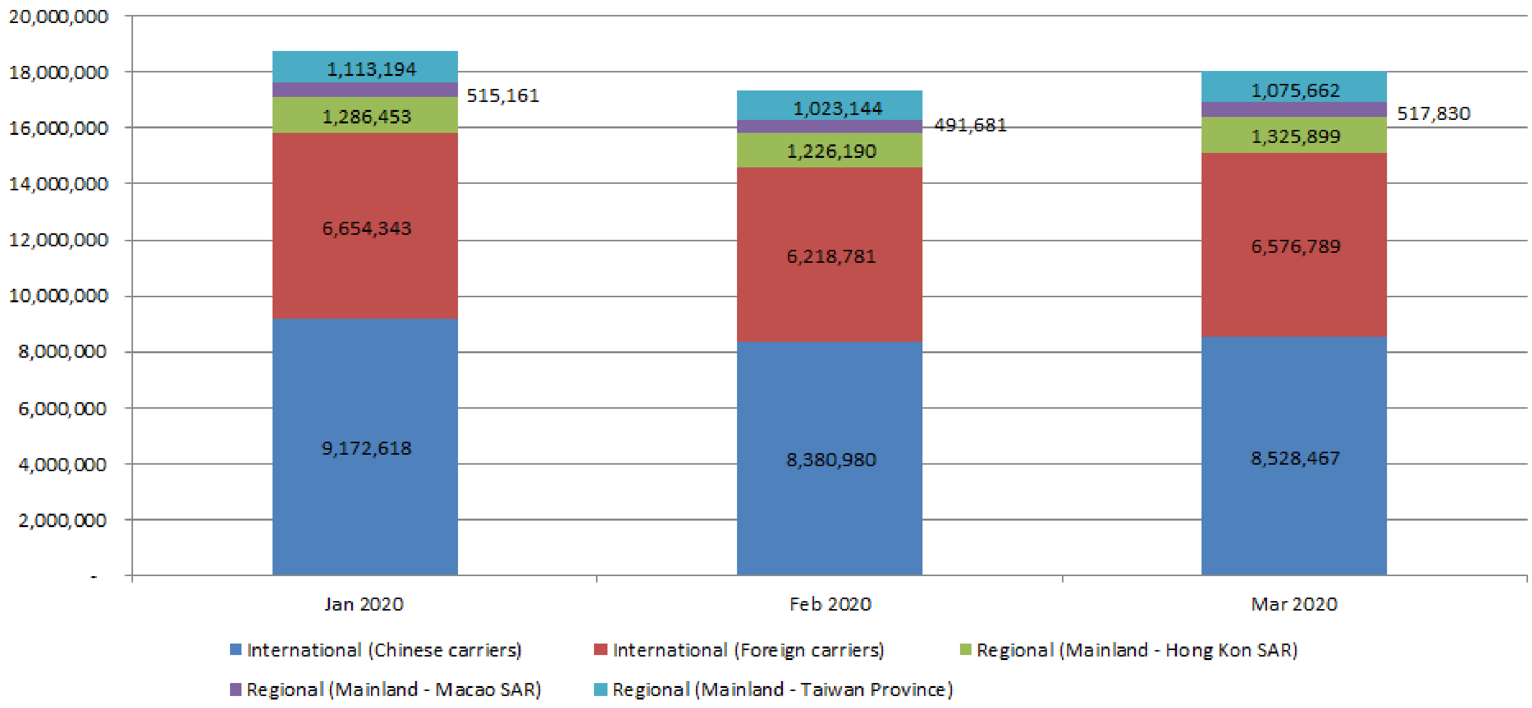
ICAO UNITING AVIATION

Baseline: 10% seat capacity increase compared to 1Q 2019



A total of YoY 10% seat capacity increase originally - planned for 1Q 2020 despite the reduction of capacity between mainland China and Hong Kong SAR and Taiwan Province

Number of seats offered by airlines (1Q 2020 originally-planned)



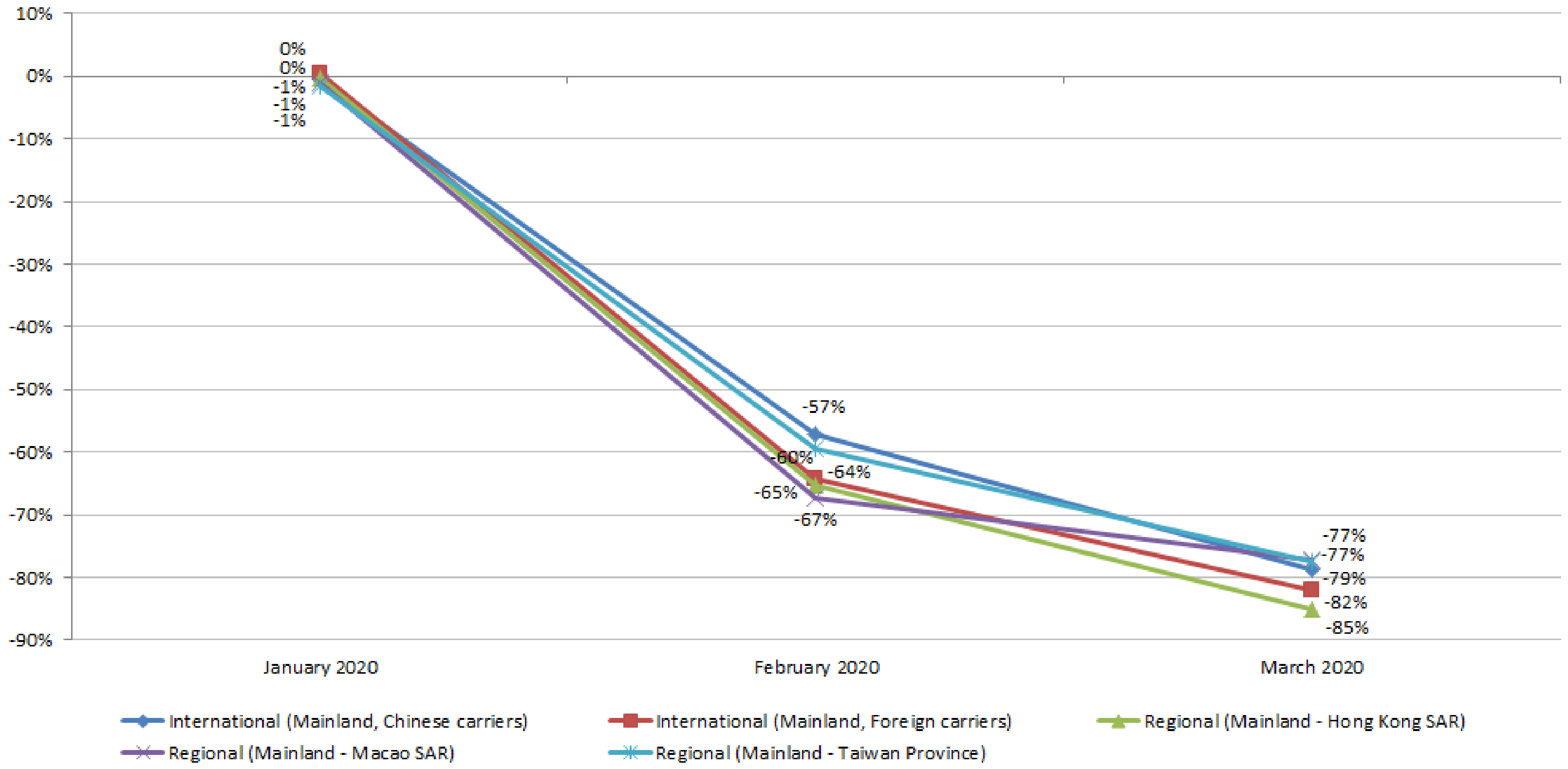
Capacity share 1Q 2020

- 48%: International by Chinese carriers
- 36%: International by foreign carriers
- 7% Mainland China - Hong Kong SAR
- 3% Mainland China - Macao SAR
- 6% Mainland China - Taiwan Province

Source: OAG Scheduled data

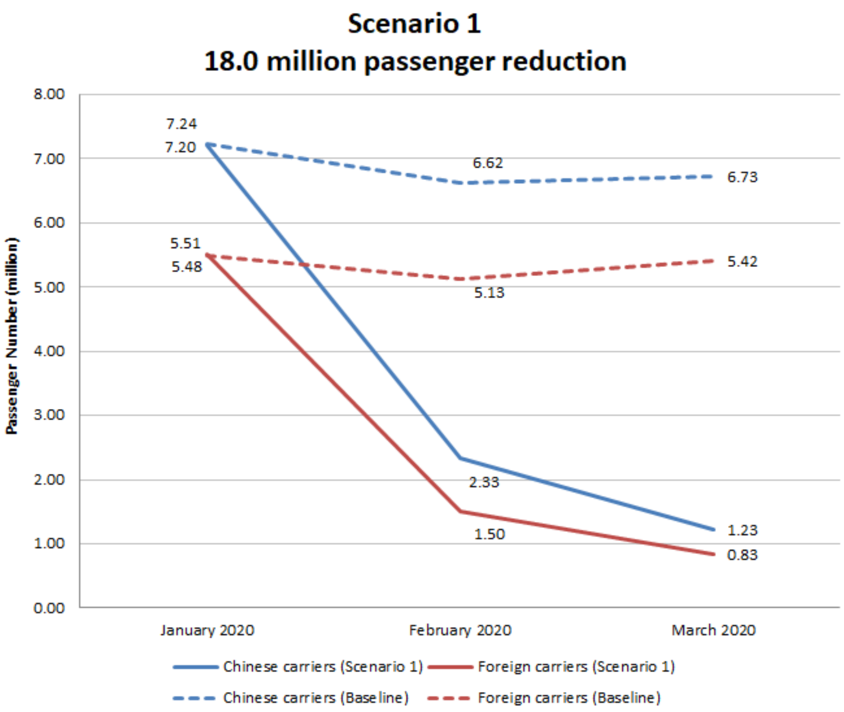
ICAO UNITING AVIATION

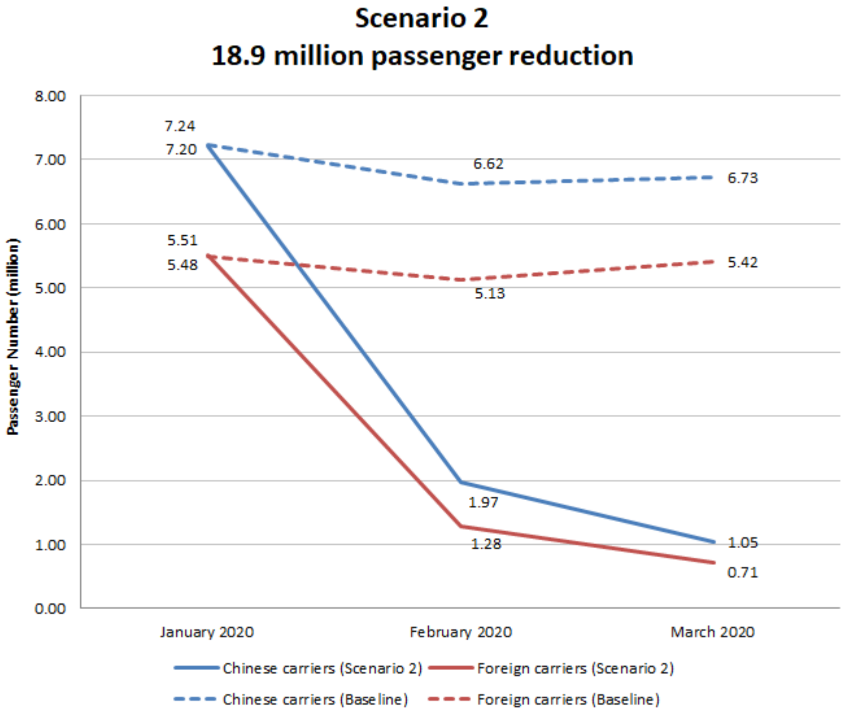
Scenarios 1 & 2: 46% seat capacity reduction from Baseline



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

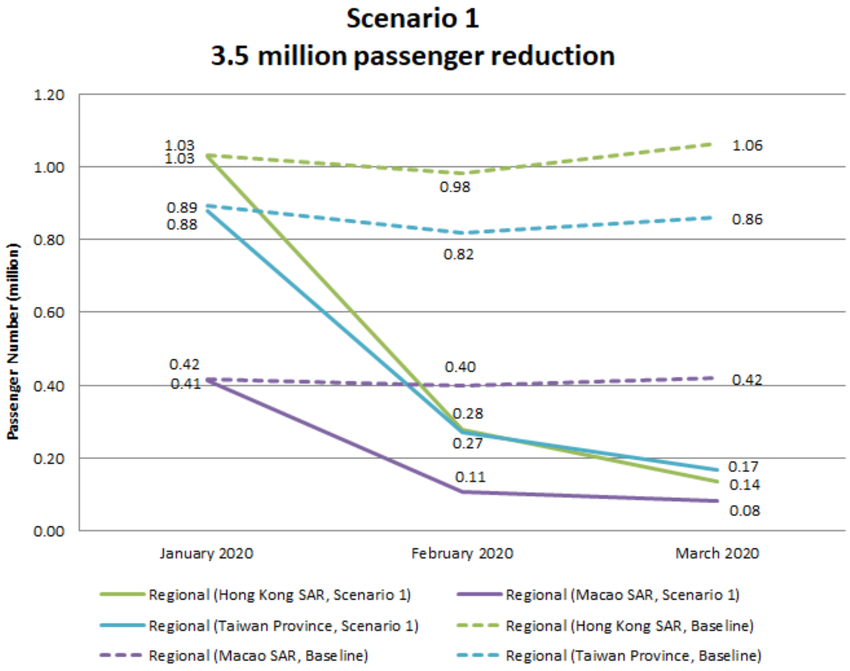
18.0 to 18.9 million “international” passenger reduction in 1Q 2020 compared to Baseline

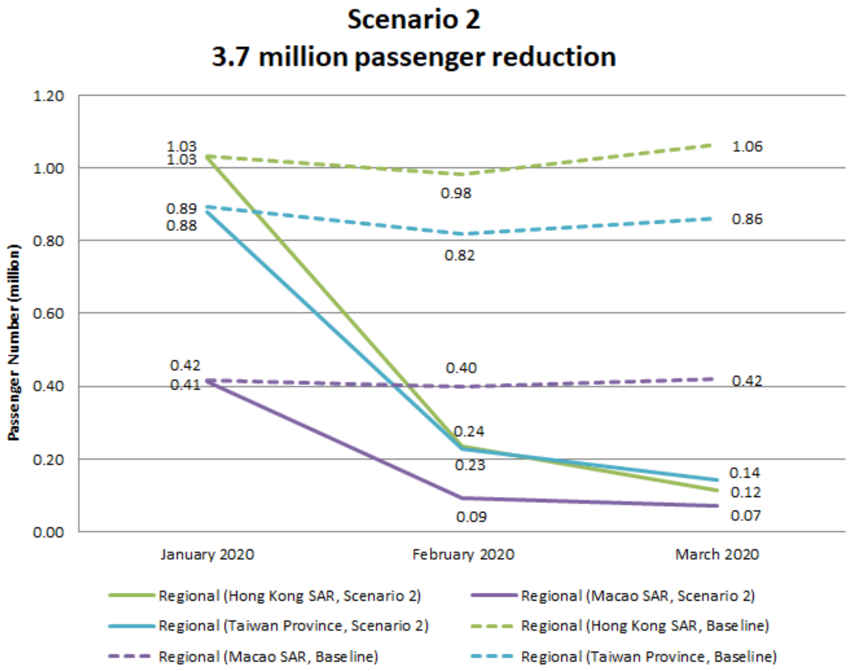




Source: ICAO estimates

3.5 to 3.7 million "regional" passenger reduction in 1Q 2020 compared to Baseline



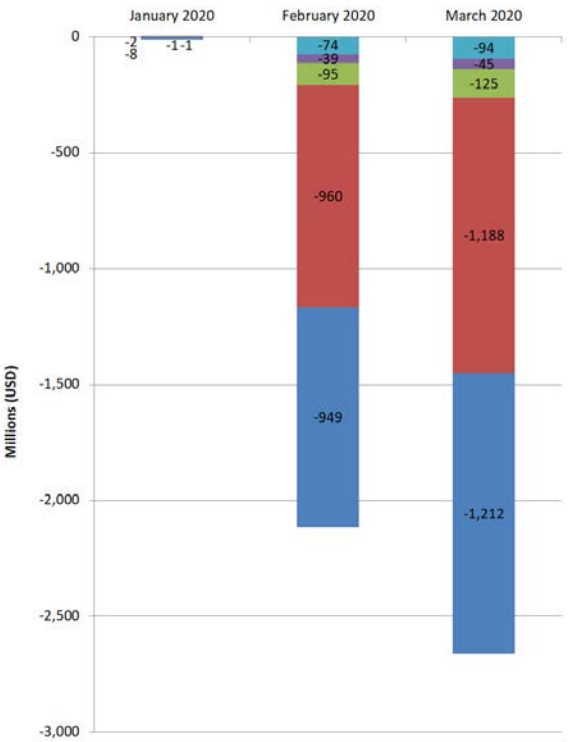


Source: ICAO estimates

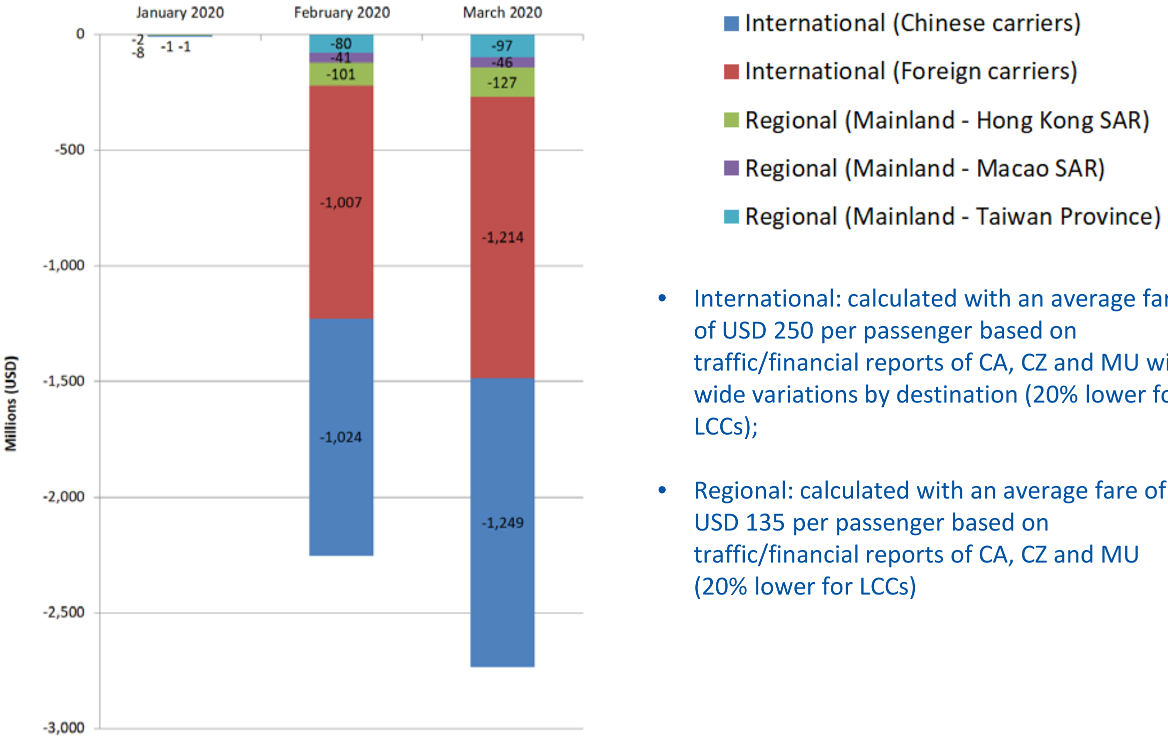
ICAO UNITING AVIATION

Approx. USD 4.8 to 5.0 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 4.8 billion reduction



Scenario 2: USD 5.0 billion reduction



- 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

Summary of estimated impact in 1Q 2020

The preliminary 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 **46% of seats offered by airlines**
- Overall reduction of **21.5 to 22.6 million passengers**
- Approx. **USD 4.8 to 5.0 billion potential loss** of gross operating revenues of airlines

	Estimated Impact on									
	Number of seats offered by airlines (000)				Number of passengers (000)				Gross operating revenues of airlines (USD, million)	
Scope of analysis	Scenario 1		Scenario 2		Scenario 1		Scenario 2		Scenario 1	Scenario 2
International from/to mainland China (Chinese carriers)	-11,600	*-44%*	-11,600	*-44%*	-9,800	*-48%*	-10,400	*-50%*	-$2,170	-$2,280
International from/to mainland China (Foreign carriers)	-9,400	*-48%*	-9,400	*-48%*	-8,200	*-51%*	-8,500	*-53%*	-$2,140	-$2,220
Regional between mainland China and Hong Kong SAR of China	-1,900	*-50%*	-1,900	*-50%*	-1,600	*-53%*	-1,700	*-55%*	-$220	-$230
Regional between mainland China and Macao SAR of China	-700	*-48%*	-700	*-48%*	-600	*-51%*	-700	*-53%*	-$80	-$90
Regional between mainland China and Taiwan, Province of China	-1,500	*-45%*	-1,500	*-45%*	-1,300	*-49%*	-1,300	*-51%*	-$170	-$180
Total	**-25,100**	***-46%***	**-25,100**	***-46%***	**-21,500**	***-50%***	**-22,600**	***-52%***	**-$4,790**	**-$4,990**

Source: ICAO estimates

Scenario Analysis:
Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

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

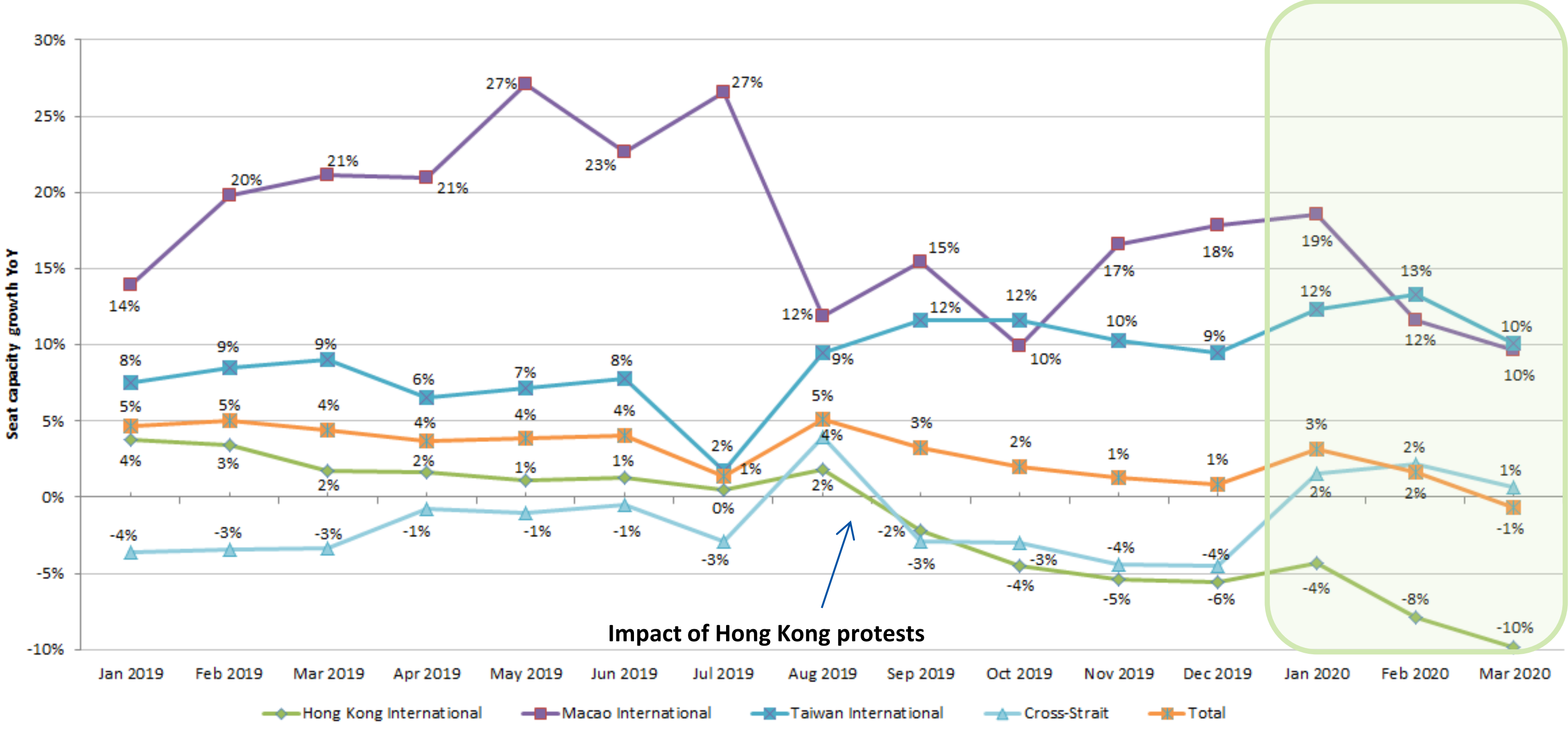
- **“Hong Kong International”** refers to scheduled international passenger services from/to Hong Kong Special Administrative Region (SAR) of China excluding:
  - scheduled passenger services between Hong Kong SAR of China and mainland China, Macao SAR of China and Taiwan, Province of China
- **“Macao 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, 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, 25 percentage points lower in March for Korea, Iran and Italy)

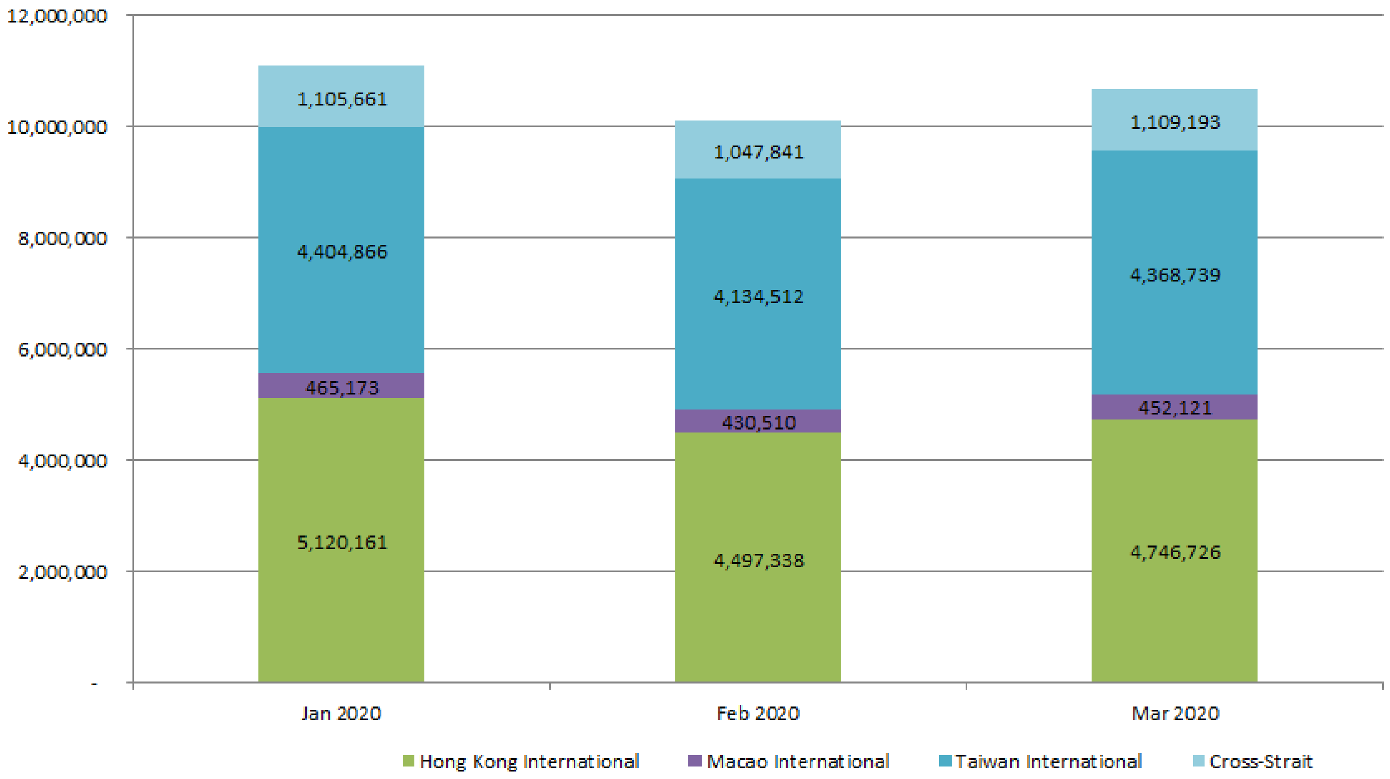
ICAO UNITING AVIATION

Baseline: 1% seat capacity increase compared to 1Q 2019



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

Number of seats offered by airlines (1Q 2020 originally-planned)



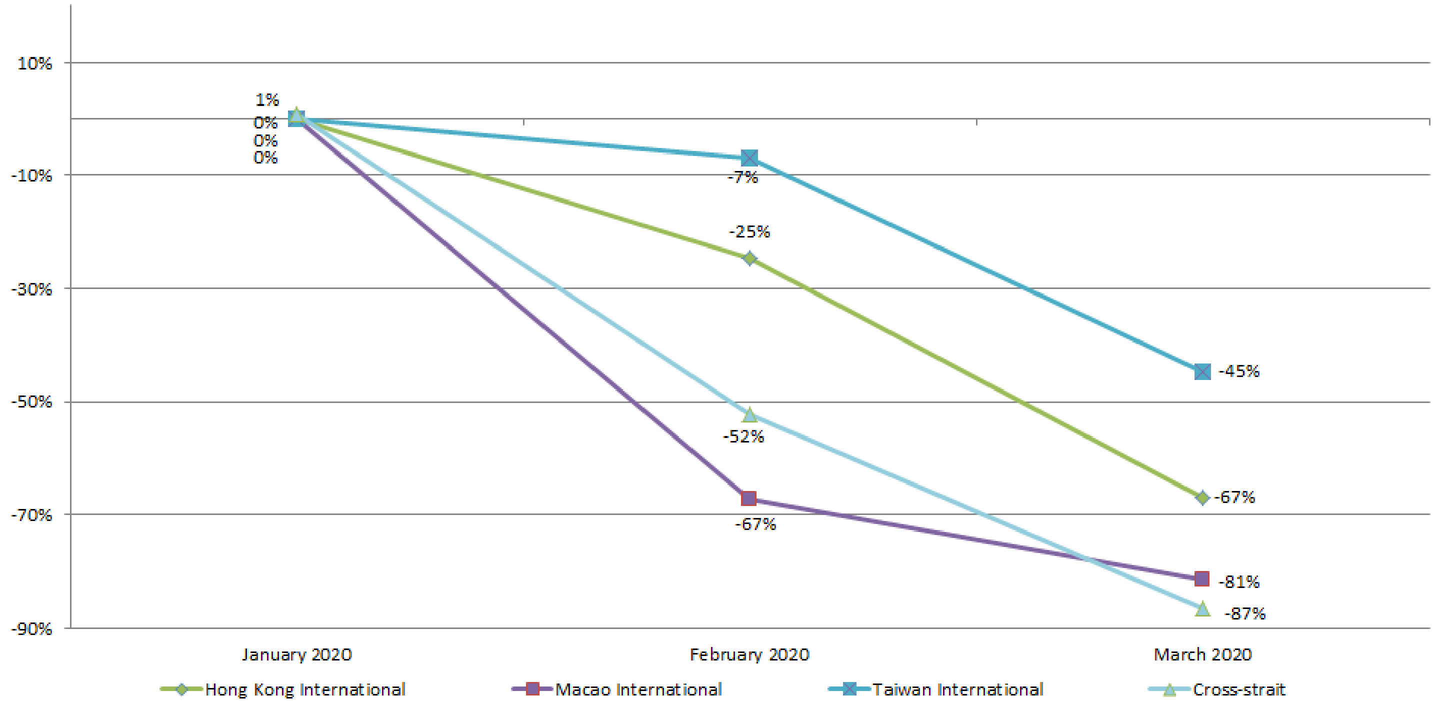
Capacity share 1Q 2020

- 45%: Hong Kong International
- 4%: Macao International
- 41%: Taiwan International
- 10%: Cross-Strait

Airlines originally planned to further reduce seat capacity in Hong Kong SAR due to the impact of Hong Kong protests and the continued trade tension.

Source: OAG Scheduled data

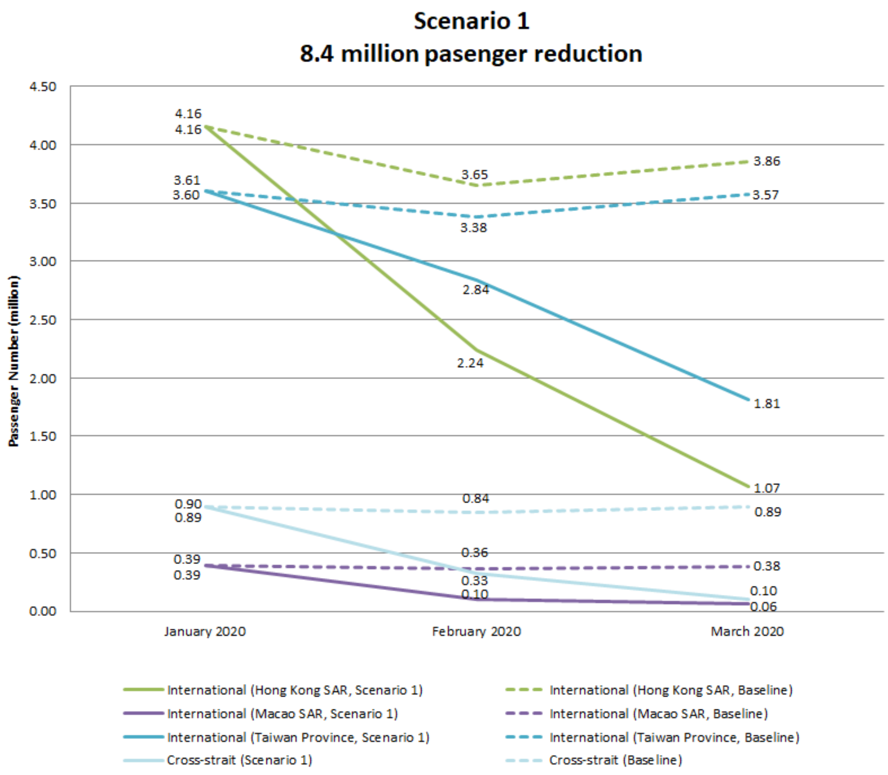
Scenarios 1 & 2: 27% seat capacity reduction from Baseline

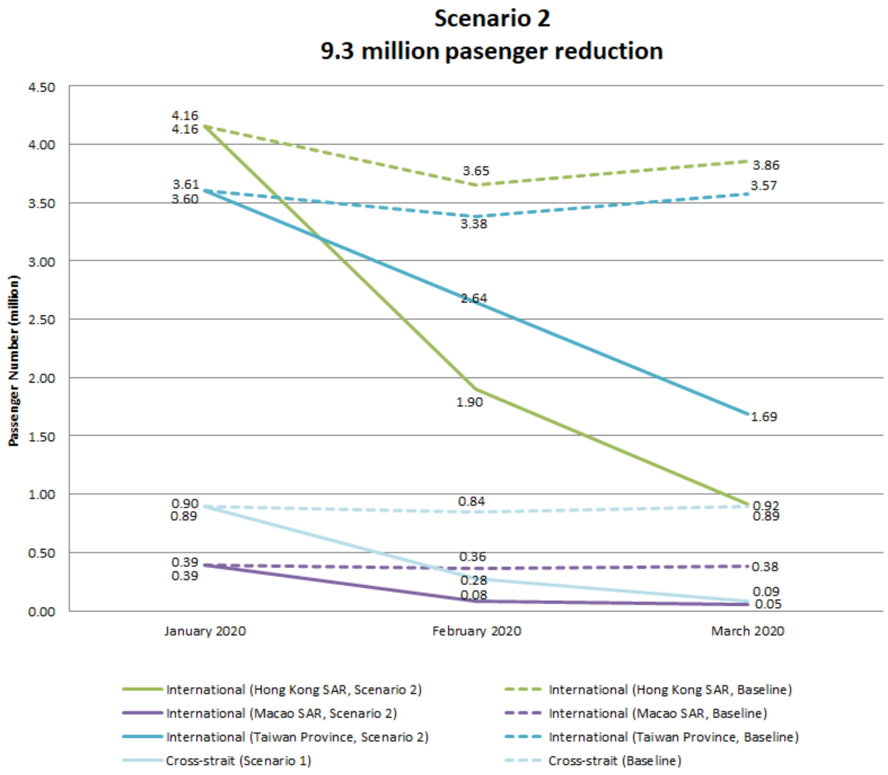


Source: ICAO estimates

8.4 to 9.3 million passenger reduction in 1Q 2020 compared to Baseline

ICAO UNITING AVIATION



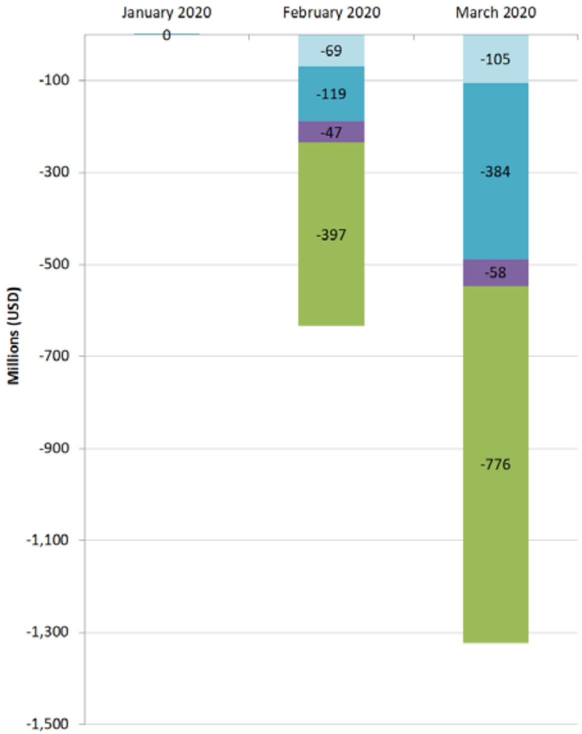


Source: ICAO estimates

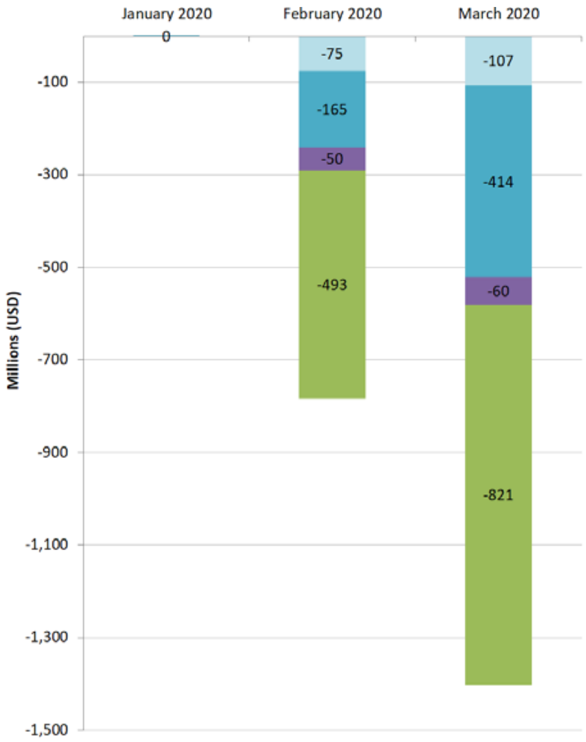
Approx. USD 1.9 to 2.2 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

ICAO UNITING AVIATION

Scenario 1: USD 1.9 billion reduction



Scenario 2: USD 2.2 billion reduction



- International (Hong Kong SAR)
- International (Macao SAR)
- International (Taiwan Province)
- Cross-strait

- 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

Summary of estimated impact in 1Q 2020

The preliminary 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 **27% of seats offered by airlines**
- Overall reduction of **8.4 to 9.3 million passengers**
- Approx. **USD 1.9 to 2.2 billion potential loss** of gross operating revenues of airlines

	Estimated Impact on									
	Number of seats offered by airlines (000)				Number of passengers (000)				Gross operating revenues of airlines (USD, million)	
Scope of analysis	Scenario 1		Scenario 2		Scenario 1		Scenario 2		Scenario 1	Scenario 2
Hong Kong International	-4,300	*-30%*	-4,300	*-30%*	-4,200	*-36%*	-4,700	*-40%*	-$1,170	-$1,310
Macao International	-700	*-49%*	-700	*-49%*	-600	*-52%*	-600	*-54%*	-$110	-$110
Taiwan International	-2,200	*-17%*	-2,200	*-17%*	-2,300	*-22%*	-2,600	*-25%*	-$500	-$580
Cross-Strait	-1,500	*-46%*	-1,500	*-46%*	-1,300	*-50%*	-1,400	*-52%*	-$170	-$180
Total	**-8,700**	***-27%***	**-8,700**	***-27%***	**-8,400**	***-32%***	**-9,300**	***-36%***	**-$1,950**	**-$2,180**

Source: ICAO estimates

Summary of Scenario Analysis: China + Additional Estimates

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

Summary of observations

- The direct impact of COVID-19 outbreak is expected to be greater than that caused by SARS in 2003 due to higher scale of flight cancellations and bigger economic size/air travel market of China
- The preliminary 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 1Q 2020 compared to originally-planned:
  - Overall reduction of **39% of seats offered by airlines**
  - Overall reduction of **29.9 to 31.9 million passengers**
  - Approx. **USD 6.7 to 7.2 billion potential loss** of gross operating revenues of airlines
- The above estimates exclude, inter alia, the impact of traffic reduction related to air cargo, Chinese domestic, as well as other international services

Source: ICAO estimates

Break-down of estimated impact in 1Q 2020

	Estimated Impact on									
	Number of seats offered by airlines (000)				Number of passengers (000)				Gross operating revenues of airlines (USD, million)	
Scope of analysis	Scenario 1		Scenario 2		Scenario 1		Scenario 2		Scenario 1	Scenario 2
International from/to mainland China (Chinese carriers)	-11,600	*-44%*	-11,600	*-44%*	-9,800	*-48%*	-10,400	*-50%*	-$2,170	-$2,280
International from/to mainland China (Foreign carriers)	-9,400	*-48%*	-9,400	*-48%*	-8,200	*-51%*	-8,500	*-53%*	-$2,140	-$2,220
Regional between mainland China and Hong Kong SAR of China	-1,900	*-50%*	-1,900	*-50%*	-1,600	*-53%*	-1,700	*-55%*	-$220	-$230
Regional between mainland China and Macao SAR of China	-700	*-48%*	-700	*-48%*	-600	*-51%*	-700	*-53%*	-$80	-$90
Regional between mainland China and Taiwan, Province of China	-1,500	*-45%*	-1,500	*-45%*	-1,300	*-49%*	-1,300	*-51%*	-$170	-$180
Sub-total	**-25,100**	***-46%***	**-25,100**	***-46%***	**-21,500**	***-50%***	**-22,600**	***-52%***	**-$4,790**	**-$4,990**
Hong Kong International	-4,300	*-30%*	-4,300	*-30%*	-4,200	*-36%*	-4,700	*-40%*	-$1,170	-$1,310
Macao International	-700	*-49%*	-700	*-49%*	-600	*-52%*	-600	*-54%*	-$110	-$110
Taiwan International	-2,200	*-17%*	-2,200	*-17%*	-2,300	*-22%*	-2,600	*-25%*	-$500	-$580
Cross-Strait	-1,500	*-46%*	-1,500	*-46%*	-1,300	*-50%*	-1,400	*-52%*	-$170	-$180
Sub-total	**-8,700**	***-27%***	**-8,700**	***-27%***	**-8,400**	***-32%***	**-9,300**	***-36%***	**-$1,950**	**-$2,180**
Grand total	**-33,800**	***-39%***	**-33,800**	***-39%***	**-29,900**	***-43%***	**-31,900**	***-46%***	**-$6,740**	**-$7,180**

Source: ICAO estimates

Domestic passenger services in mainland China in 1Q 2020

The preliminary estimates indicate the impact in terms of scheduled domestic passenger traffic within mainland China during 1Q 2020 compared to originally-planned:

- Overall reduction of **40% of seats offered by airlines**
- Overall reduction of **66.6 to 75.8 million passengers**
- Approx. **USD 6.7 to 7.6 billion potential loss** of gross operating revenues of airlines

	Estimated Impact on					
	Number of seats offered by airlines (000)		Number of passengers (000)		Gross operating revenues of airlines (USD, million)	
Scope of analysis	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Domestic within mainland China	-76,100 *-40%*	-76,100 *-40%*	-66,600 *-42%*	-75,800 *-48%*	-$6,460	-$7,774
Assumption	Seat capacity is reduced by 3% in January 2020 and 60% in February and March 2020 from the originally-planned schedules (baseline)		Load factor is down from 83% (baseline) to 80% for 1Q 2020	Load factor is down from 83% (baseline) to 80% in January 2020, 58% in February 2020 and 65% in March 2020	Calculated with an average fare of USD 97 per passenger based on CANNews.com.cn estimates	Calculated with an average fare of USD 102.5 per passenger based on traffic/financial reports of CA, CZ and MU

PRELIMINARY

Source: ICAO estimates

Potential loss of revenues from Chinese tourists to top 5 States in 1Q 2020

Top 5 States that Chinese traveller had the largest share		Baseline		Scenario 1		Scenario 2	
		Passenger number	Tourism revenue (in million USD)*	Passenger number	Tourism revenue (in million USD)*	Passenger number	Tourism revenue (in million USD)*
Australia		460,161	446.36	340,318	330.11	296,616	287.72
	Loss	-	-	-119,843	-116.25	-163,545	-158.64
France		240,523	233.31	137,867	133.73	120,670	117.05
	Loss	-	-	-102,656	-99.58	-119,853	-116.26
Japan		3,181,840	3,086.38	2,167,273	2102.25	1,855,034	1,799.38
	Loss	-	-	-1,014,567	-984.13	-1,326,806	-1287.00
Thailand		2,772,352	2,689.18	1,826,629	1771.83	1,589,458	1,541.77
	Loss	-	-	-945,723	-917.35	-1,182,894	-1147.41
United States		888,102	861.46	505,096	489.94	446,707	433.31
	Loss	-	-	-383,006	-371.52	-441,395	-428.15

- Data excludes Special Administrative Regions (SAR) of China (Hong Kong SAR and Macao SAR) and Taiwan, Province of China
- Calculated with average international tourism spending of China (USD 970) per tourist reported by UNWTO

Source: ICAO estimates

Scenario Analysis:
Republic of Korea

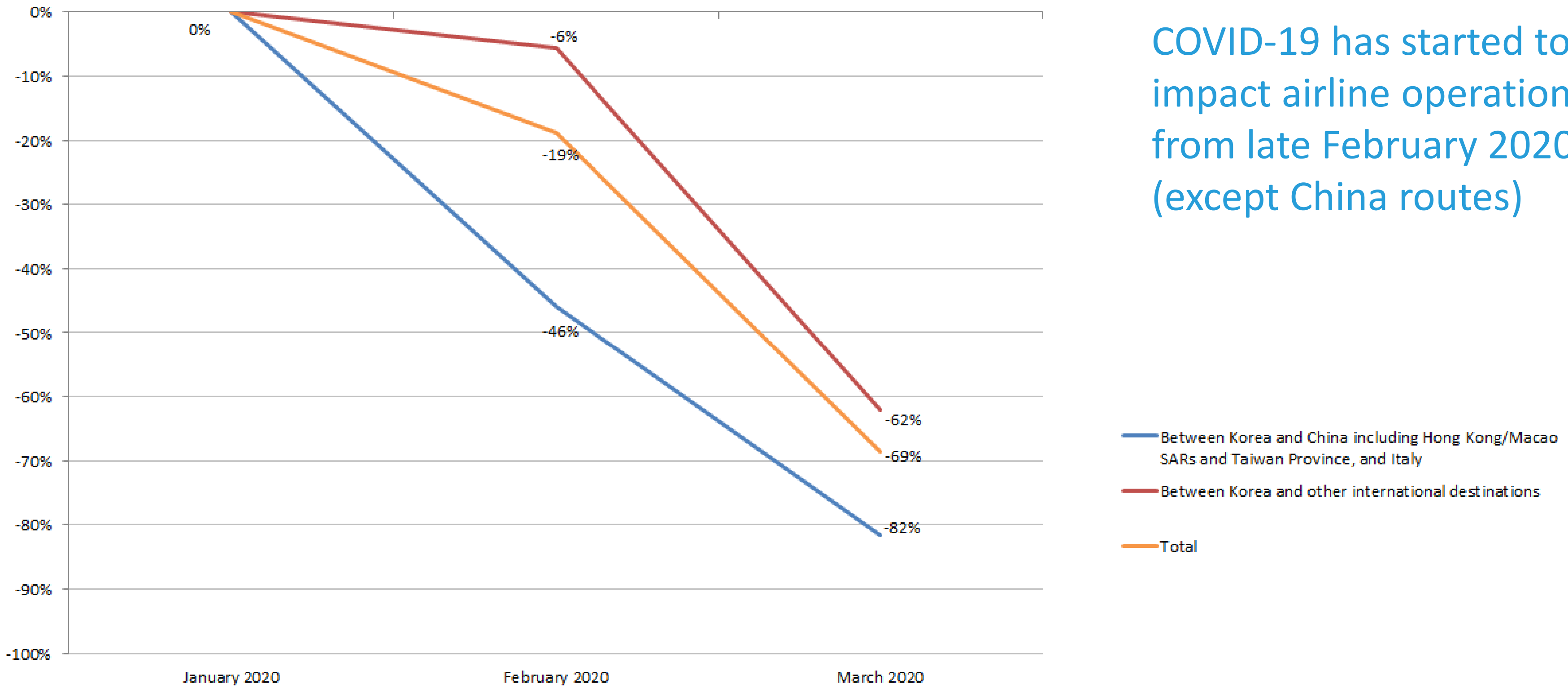
This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

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

- Scope: scheduled international passenger services from/to Republic of Korea
- Baseline (hypothetical situation without COVID-19 outbreak)*
  - Seat capacity: used "originally-planned" winter schedule
  - Load factor: applied 80% (78% for Chinese carriers, 87% for LCCs)
- Scenario 1 (mild)*
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January; 8 and 15 percentage points lower than baseline in February and March, respectively (15 and 20 percentage points lower for China and Hong Kong/Macao SARs)
- Scenario 2 (severe)*
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January; 13 and 25 percentage points lower than baseline in February and March, respectively (25 percentage points lower in February for China and Hong Kong/Macao SARs)

*** Between Republic of Korea and China, Hong Kong/Macao SARs of China, as well as Taiwan, Province of China**: extracted the impacts involving Korea from the respective scenarios of China, Hong Kong/Macao SARs and Taiwan Province

29% seat capacity reduction in 1Q 2020 from Baseline



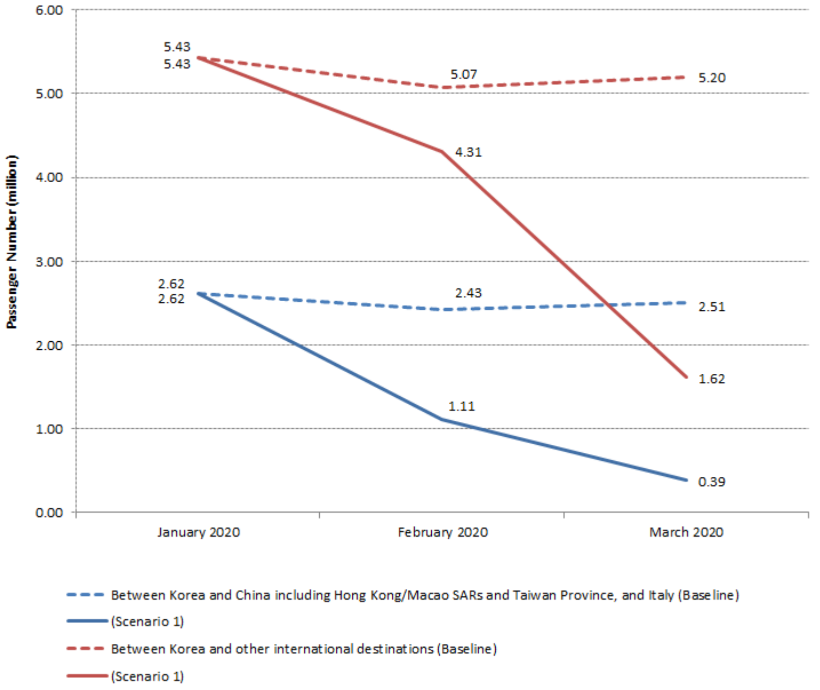
COVID-19 has started to impact airline operations from late February 2020 (except China routes)

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

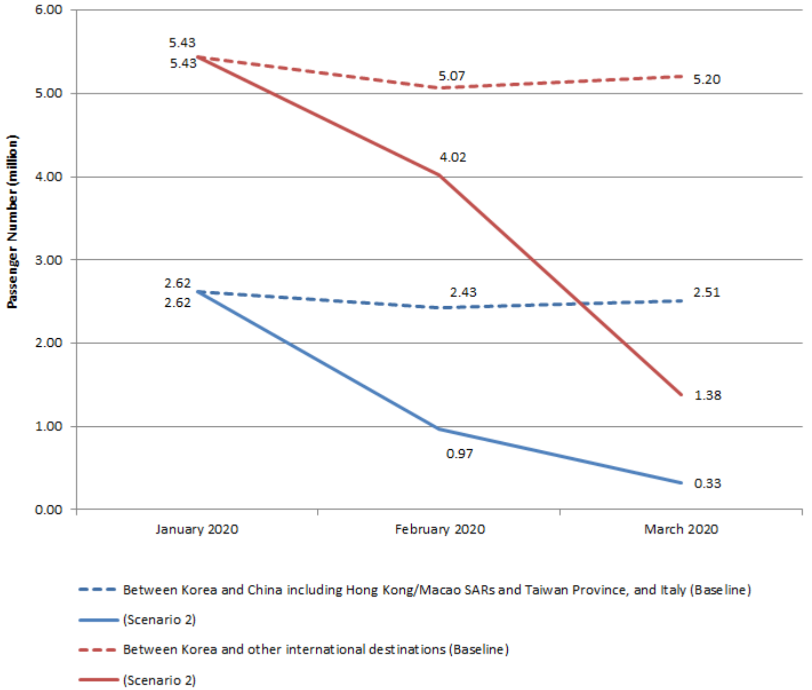
7.8 to 8.5 million passenger reduction in 1Q 2020 compared to Baseline

ICAO UNITING AVIATION

Scenario 1
6.4 million passenger reduction



Scenario 2
7.0 million passenger reduction

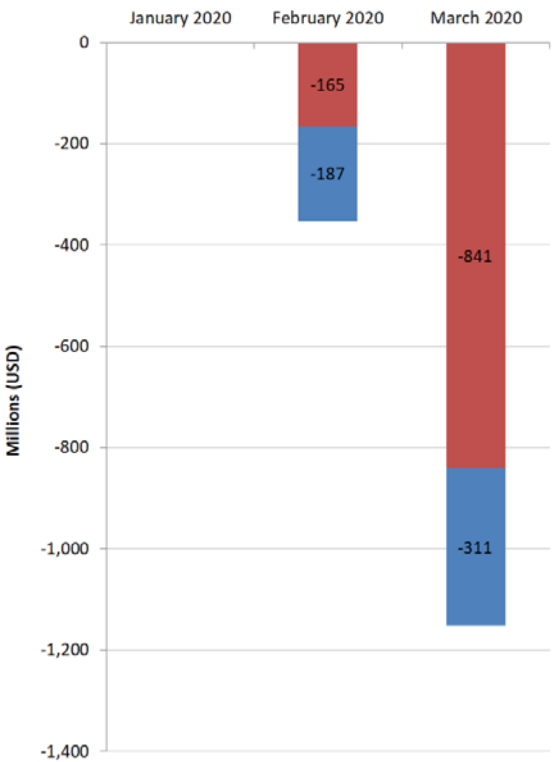


Source: ICAO estimates

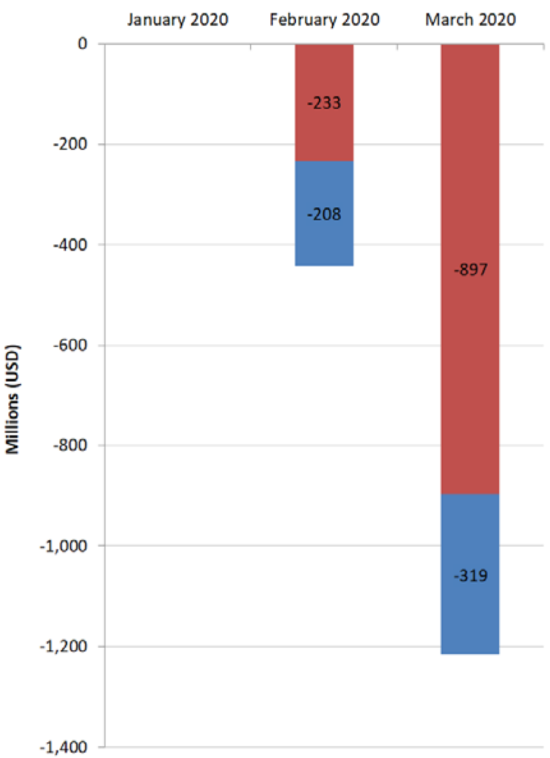
ICAO UNITING AVIATION

Approx. USD 1.5 to 1.7 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 1.5 billion reduction



Scenario 2: USD 1.7 billion reduction



- Between Korea and China including Hong Kong/Macao SARs and Taiwan Province, and Italy
- Between Korea and other international destinations

- Between Korea and China, Hong Kong/Macao SARs, as well as Taiwan Province: extracted the impact involving Korea from scenarios 1 and 2 of China etc.;
- Other internal destinations: calculated with an average fare ranging from USD 155 to 485 by destination (20% lower for LCCs)

Source: ICAO estimates

Scenario Analysis: Italy

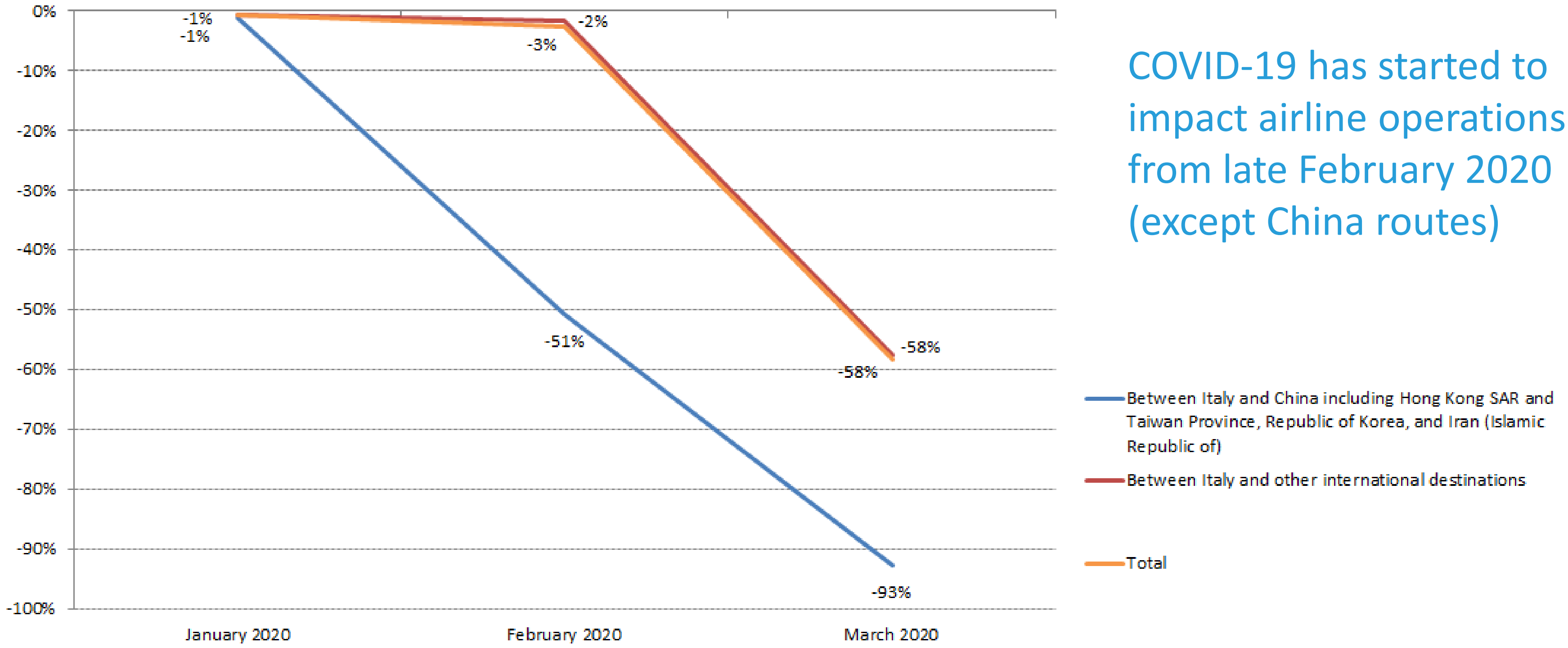
This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

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

- Scope: scheduled international passenger services from/to Republic of Korea
- Baseline (hypothetical situation without COVID-19 outbreak)*
  - Seat capacity: used "originally-planned" winter schedule
  - Load factor: applied 80% (78% for Chinese carriers, 87% for LCCs)
- Scenario 1 (mild)*
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January and February (15 and 8 percentage points lower than baseline in February for China/Hong Kong SAR and Korea/Iran, respectively); 15 percentage points lower than baseline in March
- Scenario 2 (severe)*
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: applied the same % as baseline in January and February (25 and 13 percentage points lower than baseline in February for China/Hong Kong SAR and Korea/Iran, respectively); 25 percentage points lower than baseline in March

*** Between Italy and China, Hong Kong SARs of China, Taiwan, Province of China, as well as Republic of Korea**: extracted the impacts involving Italy from the respective scenarios of China, Hong Kong SARs, Taiwan Province and Korea

22% seat capacity reduction in 1Q 2020 from Baseline

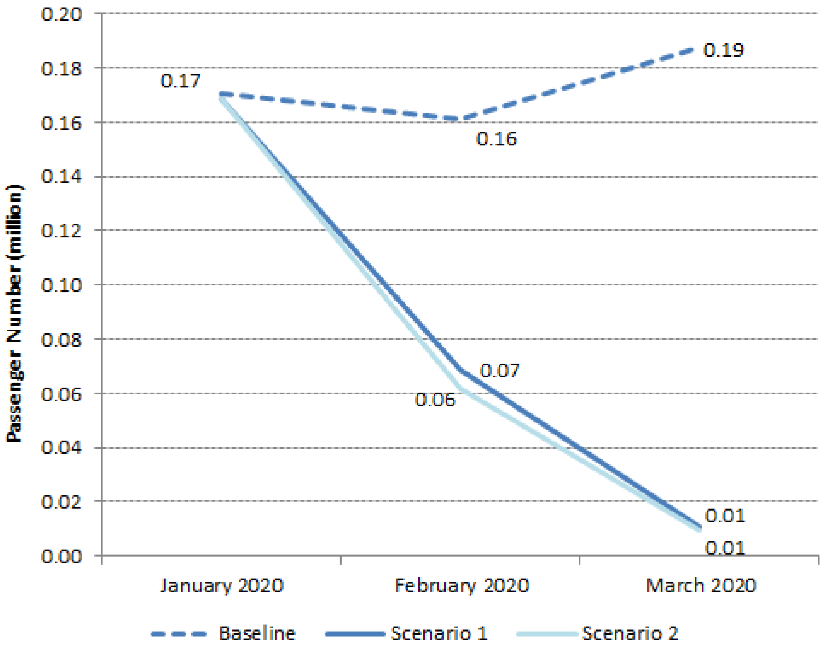


COVID-19 has started to impact airline operations from late February 2020 (except China routes)

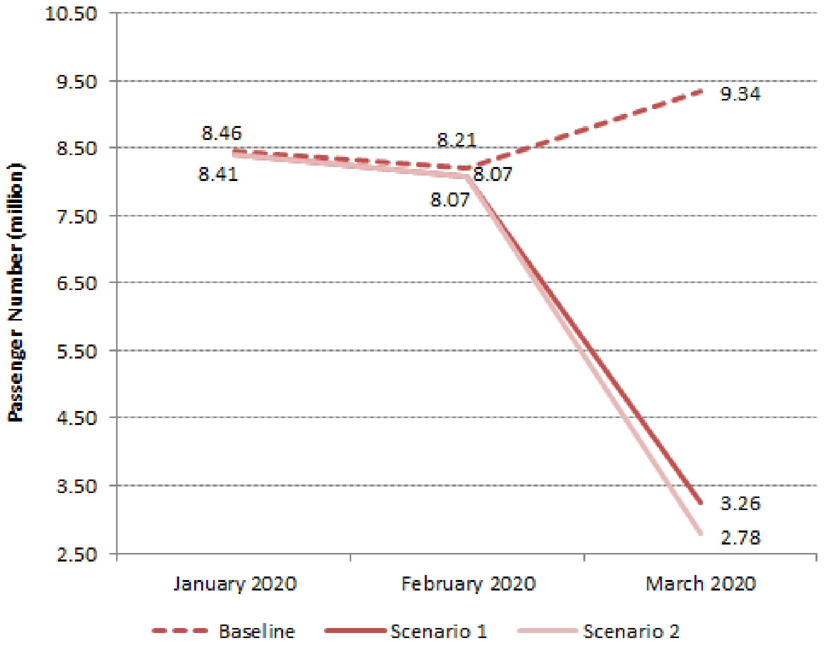
Source: ICAO estimates

ICAO UNITING AVIATION

6.5 to 7.0 million passenger reduction in 1Q 2020 compared to Baseline



Between Italy and China including Hong Kong SAR, Republic of Korea, and Iran (Islamic Republic of)



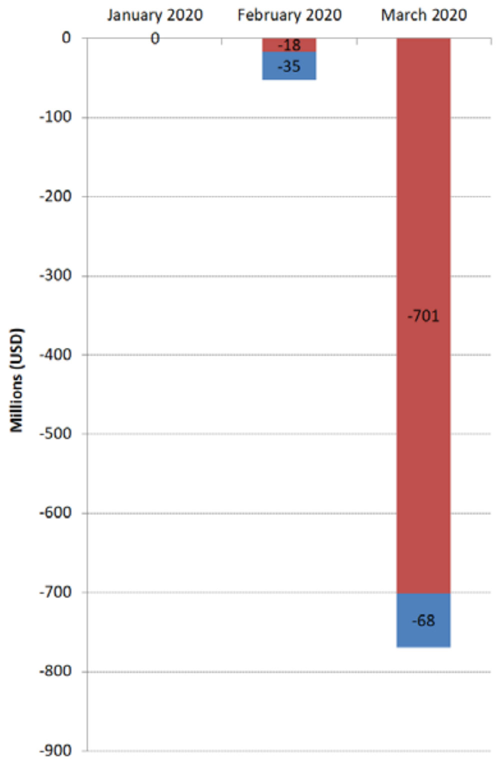
Between Italy and other international destinations

Source: ICAO estimates

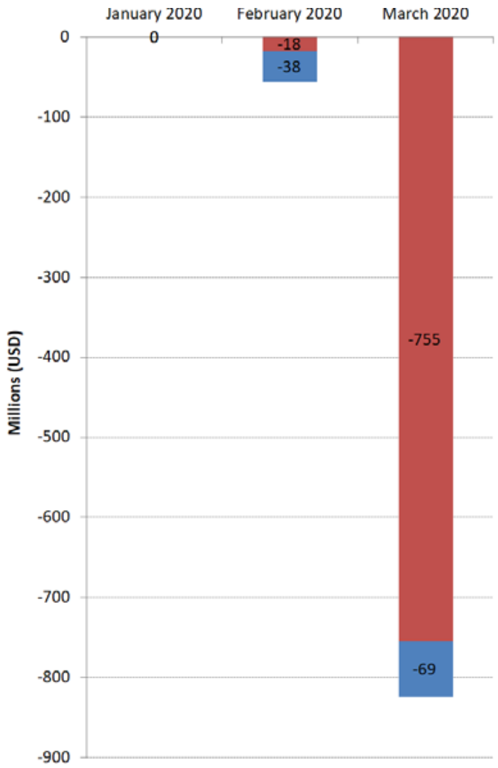
ICAO UNITING AVIATION

Approx. USD 0.8 to 0.9 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 820 million reduction



Scenario 2: USD 880 million reduction



- Between Italy and China including Hong Kong SAR and Taiwan Province, Republic of Korea, and Iran (Islamic Republic of)
- Between Italy and other international destinations

- Between Italy and China, Hong Kong SAR and Macao SAR of China, as well as Republic of Korea: extracted the impacts involving Italy from the respective scenarios of China, Hong Kong/Macao SARs and Korea;
- Other internal destinations: calculated with an average fare ranging from USD 60 to 485 by destination (20% lower for LCCs)

Source: ICAO estimates

Scenario Analysis:
Iran (Islamic Republic of)

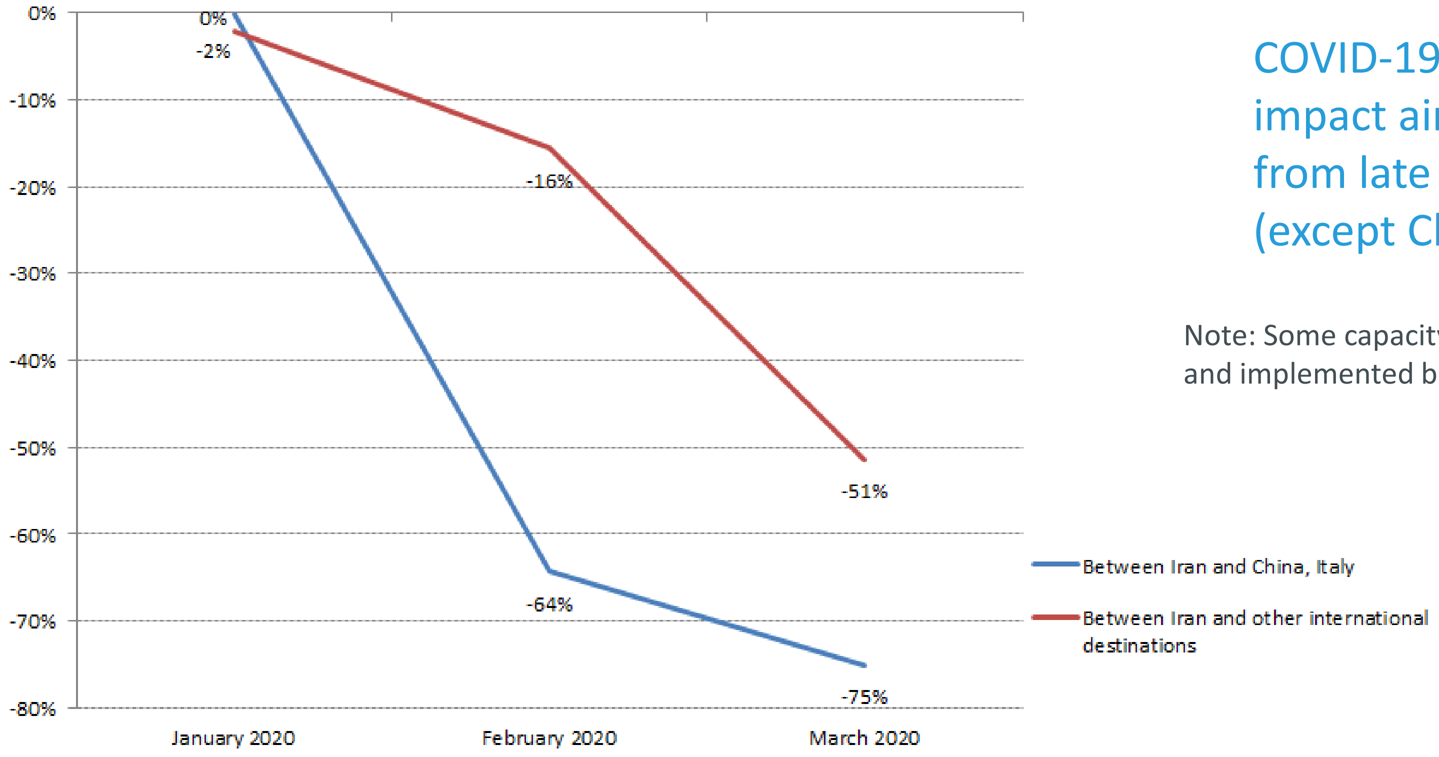
This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

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

- Scope: scheduled international passenger services from/to Iran (Islamic Republic of)
- Baseline (hypothetical situation without COVID-19 outbreak)*
  - Seat capacity: used "originally-planned" winter schedule
  - Load factor: applied 80%
- Scenario 1 (mild)*
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: used the same percentage as Baseline
- Scenario 2 (severe)*
  - Seat capacity: estimated by airlines' schedule changes
  - Load factor: 10 percentage points lower in March (i.e. 70%)

*** Between Iran (Islamic Republic of) and China, as well as Italy**: extracted the impacts involving Iran from the respective scenarios of China and Italy

25% seat capacity reduction in 1Q 2020 from Baseline

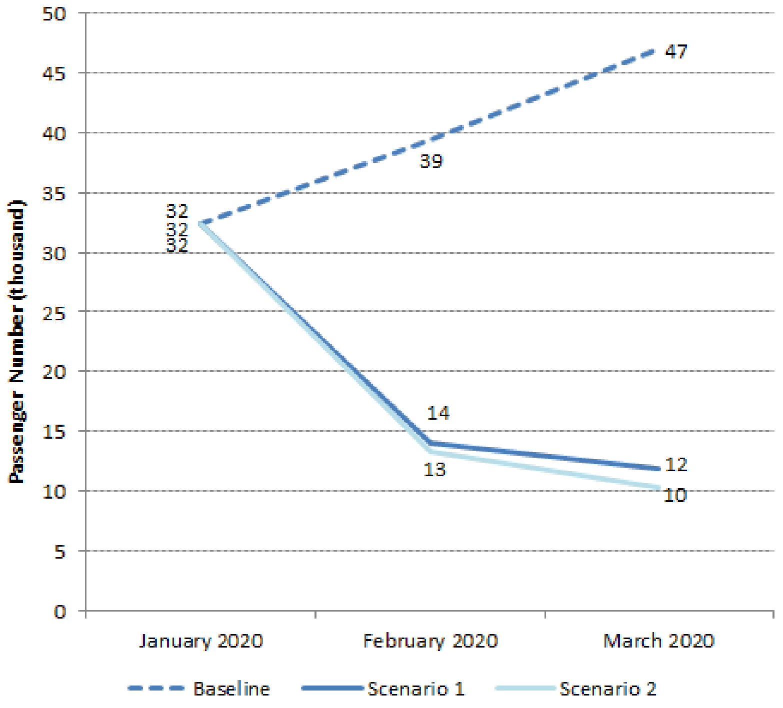


COVID-19 has started to impact airline operations from late February 2020 (except China routes)

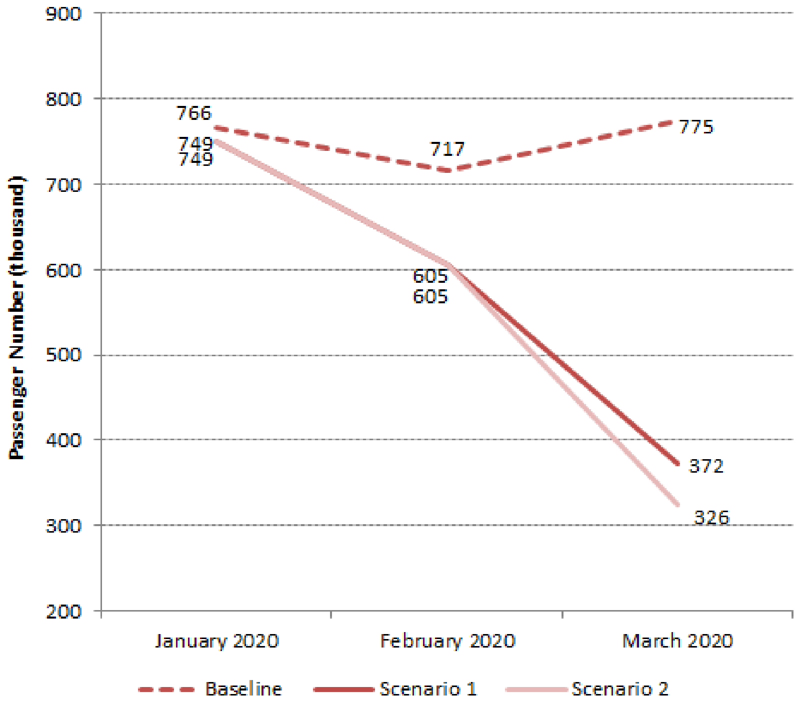
Note: Some capacity change was announced and implemented before COVID-19 outbreak

Source: ICAO estimates

600,000 to 640,000 passenger reduction in 1Q 2020 compared to Baseline

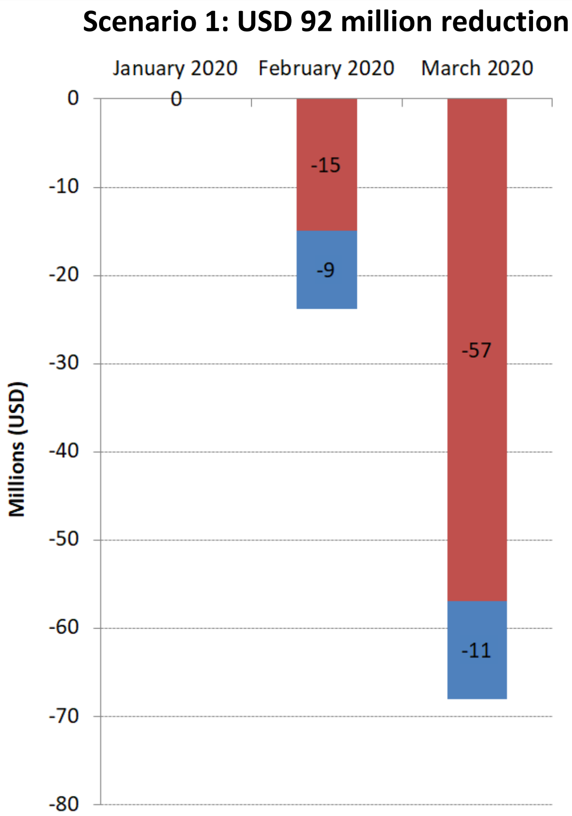


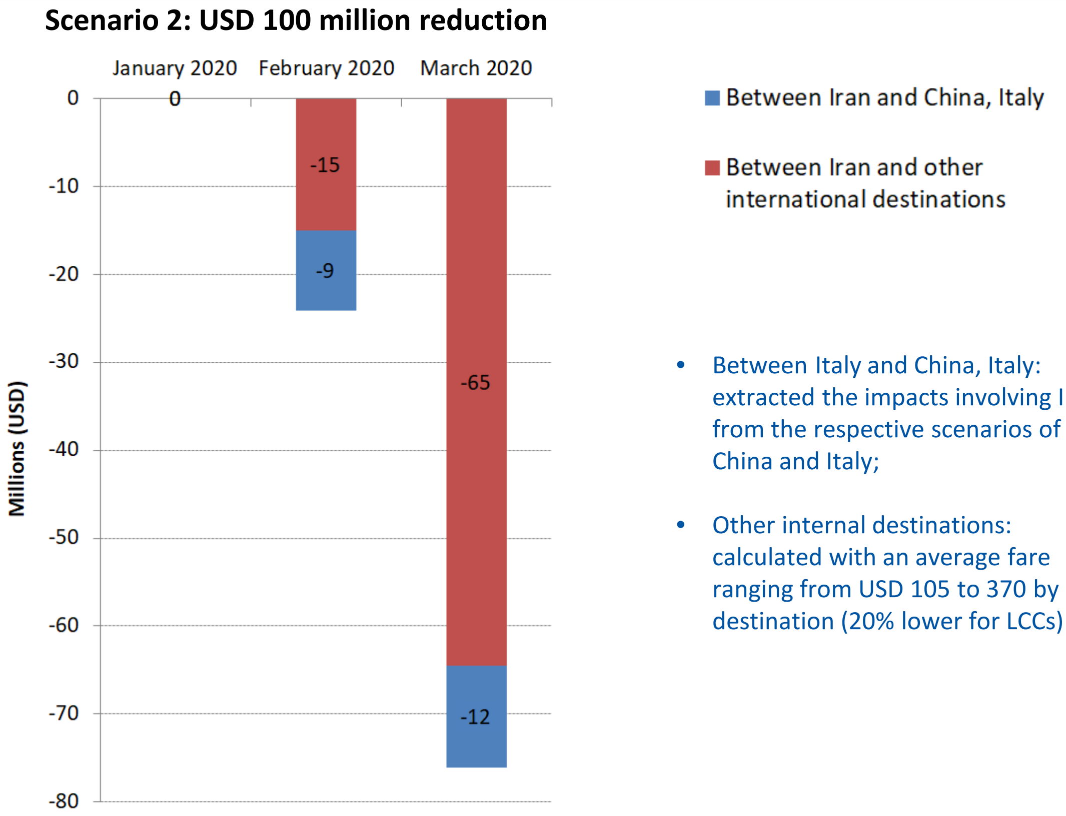
Between Iran and China, Italy



Between Iran and other international destinations

Approx. USD 92 to 100 million potential loss of airline revenues for 1Q 2020 compared to Baseline





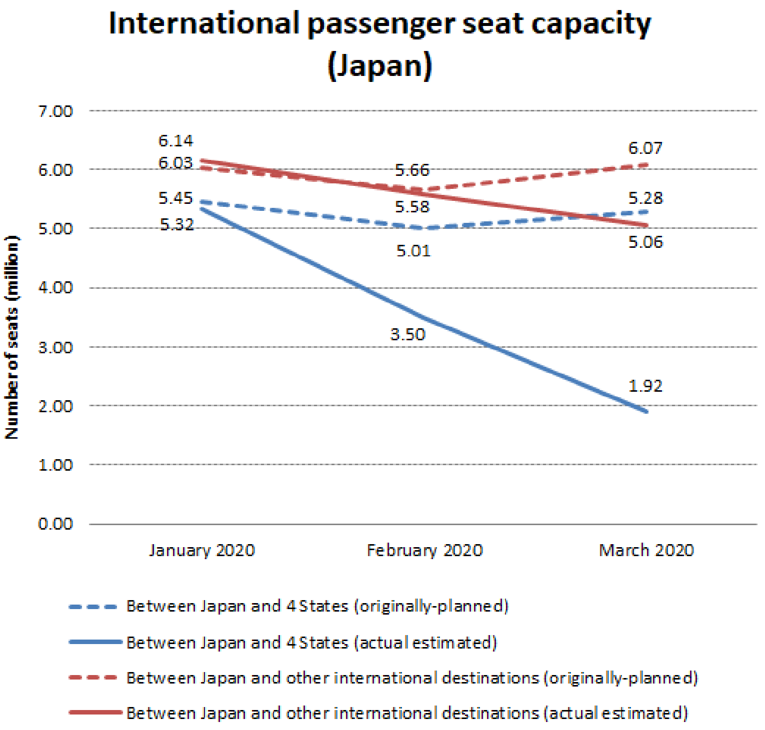
- Between Italy and China, Italy: extracted the impacts involving Iran from the respective scenarios of China and Italy;
- Other internal destinations: calculated with an average fare ranging from USD 105 to 370 by destination (20% lower for LCCs)

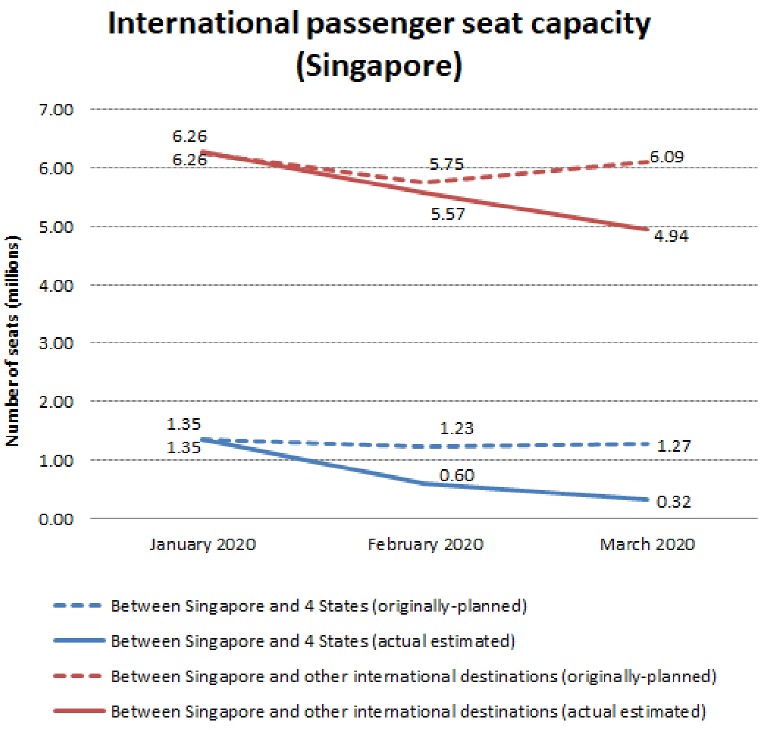
Source: ICAO estimates

Preliminary Analysis:
Japan and Singapore

This section contains a very preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

Japan/Singapore reported the second highest confirmed cases till mid-February*





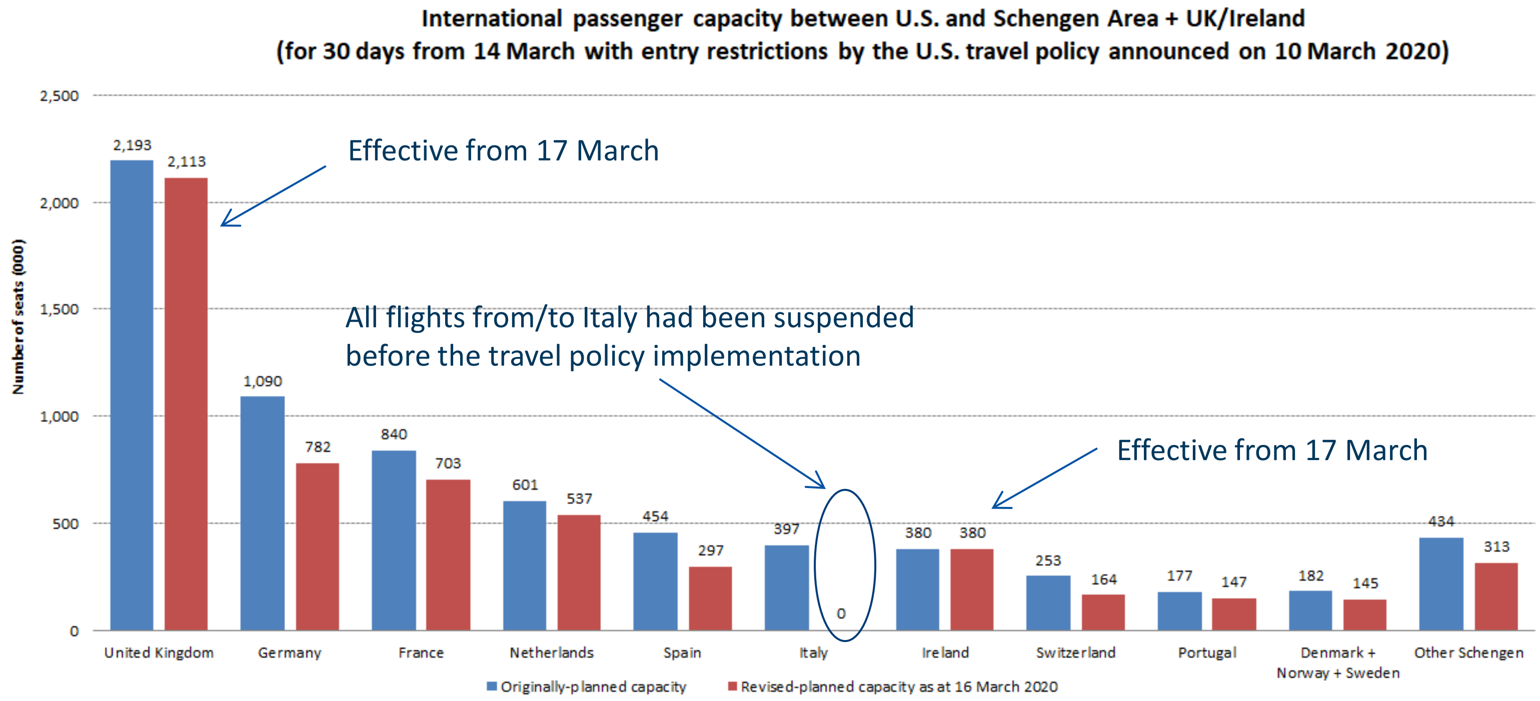
* *Coronavirus Disease 2019 (COVID-19) Situation Report* by WHO

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

Preliminary Analysis:
Transatlantic between United States and Schengen Area + United Kingdom/Ireland

This section contains a very preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

19% capacity reduction so far since the announcement of U.S. travel policy



The U.S. travel policy would affect maximum approx. **5.5 million passengers** for one month if all the flights were suspended

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

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