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

Montréal, Canada
19 March 2020
• Introduction and Background
• Scenario Analysis: **Mainland China**
• Scenario Analysis: **Hong Kong and Macao SARs of China and Taiwan, Province of China**
• Summary of Scenario Analysis and Additional Estimates: **China**
• Scenario Analysis: **Republic of Korea**
• Scenario Analysis: **Italy**
• Scenario Analysis: **Iran (Islamic Republic of)**
• Preliminary Analysis: **Japan and Singapore**
• Preliminary Analysis: **Transatlantic between United States and Schengen Area**
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, 30.3 to 32.2 million passenger reduction, USD 6.8 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, 6.6 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, 720,000 to 810,000 passenger reduction, USD 110 to 130 million loss of gross operating revenues of airlines

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

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

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)
Total number of passenger moved through Chinese airports 2003-2018
(million of passengers)

Passengers move to/from Chinese airports 2003 vs 2018

Annual average growth rate: 9.6%

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
(%)
China is more integrated in the global economy

Source: OECD Interim Economic Outlook dated 2 March 2020
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

Source: ICAO-ICM MIDT data
COVID-19 outbreak caused a substantial setback in flight bookings for Chinese New Year

Chinese air arrivals in worldwide regions for Chinese New Year, before vs one week after the travel restrictions

- CNY2019 final
- CNY2020 as of 19 Jan
- CNY2020 as of 26 Jan

Travel dates from 10 January to 6 February 2020 vs. 21 January to 17 February 2020, according to bookings issued as of 19 January and 26 January 2020.

Source: ForwardKeys air reservation data.
Flight cancellation has exceeded actual operations since 31 January 2020

Number of originally-planned flights

Number of actual operations

Number of cancellation

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.
• **“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: 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.

Impact of Hong Kong protests

Source: OAG scheduled data
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
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
3.7 to 3.9 million “regional” passenger reduction in 1Q 2020 compared to Baseline

Source: ICAO estimates
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

Source: ICAO estimates

- 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)
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 21.8 to 22.8 million passengers
- Approx. USD 4.8 to 5.0 billion potential loss of gross operating revenues of airlines

### Summary of estimated impact in 1Q 2020

<table>
<thead>
<tr>
<th>Scope of analysis</th>
<th>Number of seats offered by airlines (000)</th>
<th>Number of passengers (000)</th>
<th>Gross operating revenues of airlines (USD, million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scenario 1</td>
<td>Scenario 2</td>
<td>Scenario 1</td>
</tr>
<tr>
<td>International from/to mainland China (Chinese carriers)</td>
<td>-11,600</td>
<td>-11,600</td>
<td>-9,800</td>
</tr>
<tr>
<td></td>
<td>-44%</td>
<td>-44%</td>
<td>-48%</td>
</tr>
<tr>
<td>International from/to mainland China (Foreign carriers)</td>
<td>-9,400</td>
<td>-9,400</td>
<td>-8,200</td>
</tr>
<tr>
<td></td>
<td>-48%</td>
<td>-48%</td>
<td>-51%</td>
</tr>
<tr>
<td>Regional between mainland China and Hong Kong SAR of China</td>
<td>-1,900</td>
<td>-1,900</td>
<td>-1,700</td>
</tr>
<tr>
<td></td>
<td>-50%</td>
<td>-50%</td>
<td>-56%</td>
</tr>
<tr>
<td>Regional between mainland China and Macao SAR of China</td>
<td>-700</td>
<td>-700</td>
<td>-700</td>
</tr>
<tr>
<td></td>
<td>-48%</td>
<td>-48%</td>
<td>-54%</td>
</tr>
<tr>
<td>Regional between mainland China and Taiwan, Province of China</td>
<td>-1,500</td>
<td>-1,500</td>
<td>-1,400</td>
</tr>
<tr>
<td></td>
<td>-45%</td>
<td>-45%</td>
<td>-53%</td>
</tr>
<tr>
<td>Total</td>
<td>-25,100</td>
<td>-25,100</td>
<td>-21,800</td>
</tr>
<tr>
<td></td>
<td>-46%</td>
<td>-46%</td>
<td>-50%</td>
</tr>
</tbody>
</table>

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.
• “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:

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.

Impact of Hong Kong protests

Source: OAG scheduled data
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
8.5 to 9.4 million passenger reduction in 1Q 2020 compared to Baseline

Source: ICAO estimates
Approx. USD 2.0 to 2.2 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Source: ICAO estimates

- 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)
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 **8.5 to 9.4 million passengers**
- Approx. **USD 2.0 to 2.2 billion potential loss** of gross operating revenues of airlines

<table>
<thead>
<tr>
<th>Scope of analysis</th>
<th>Estimated Impact on</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of seats offered by airlines (000)</td>
<td>-4,300</td>
<td>-30%</td>
<td>-4,300</td>
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<tr>
<td></td>
<td>Number of passengers (000)</td>
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<td>-17%</td>
<td>-2,200</td>
<td>-17%</td>
<td>-2,300</td>
<td>-22%</td>
</tr>
<tr>
<td></td>
<td>Gross operating revenues of airlines (USD, million)</td>
<td>-1,500</td>
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<td>-1,500</td>
<td>-46%</td>
<td>-1,400</td>
<td>-53%</td>
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<tr>
<td>Total</td>
<td></td>
<td>-8,700</td>
<td>-27%</td>
<td>-8,700</td>
<td>-27%</td>
<td>-8,500</td>
<td>-33%</td>
</tr>
</tbody>
</table>

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.
• 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 30.3 to 32.2 million passengers
  – Approx. USD 6.8 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

**Source:** ICAO estimates

<table>
<thead>
<tr>
<th>Scope of analysis</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of seats offered by airlines (000)</td>
<td>Number of passengers (000)</td>
<td>Gross operating revenues of airlines (USD, million)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International from/to mainland China (Chinese carriers)</td>
<td>-11,600</td>
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<td>-11,600</td>
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<td>-2,170</td>
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<td>-44%</td>
<td>-48%</td>
<td>-44%</td>
<td>-50%</td>
<td>-52%</td>
<td>-52%</td>
</tr>
<tr>
<td>International from/to mainland China (Foreign carriers)</td>
<td>-9,400</td>
<td>-8,200</td>
<td>-9,400</td>
<td>-8,500</td>
<td>-2,140</td>
<td>-2,220</td>
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<tr>
<td></td>
<td>-48%</td>
<td>-51%</td>
<td>-48%</td>
<td>-53%</td>
<td>-52%</td>
<td>-52%</td>
</tr>
<tr>
<td>Regional between mainland China and Hong Kong SAR of China</td>
<td>-1,900</td>
<td>-1,700</td>
<td>-1,900</td>
<td>-1,800</td>
<td>-230</td>
<td>-240</td>
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<tr>
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<td>-50%</td>
<td>-56%</td>
<td>-50%</td>
<td>-58%</td>
<td>-52%</td>
<td>-52%</td>
</tr>
<tr>
<td>Regional between mainland China and Macao SAR of China</td>
<td>-700</td>
<td>-700</td>
<td>-700</td>
<td>-700</td>
<td>-90</td>
<td>-90</td>
</tr>
<tr>
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<td>-48%</td>
<td>-56%</td>
<td>-52%</td>
<td>-52%</td>
</tr>
<tr>
<td>Regional between mainland China and Taiwan, Province of China</td>
<td>-1,500</td>
<td>-1,400</td>
<td>-1,500</td>
<td>-1,400</td>
<td>-180</td>
<td>-190</td>
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<td>-55%</td>
<td>-52%</td>
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</tr>
<tr>
<td>Sub-total</td>
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<td>-22,800</td>
<td>-4,820</td>
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<tr>
<td>Hong Kong International</td>
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<td></td>
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<td>-36%</td>
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<td>-40%</td>
<td>-36%</td>
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<tr>
<td>Macao International</td>
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<td>-49%</td>
<td>-54%</td>
<td>-49%</td>
<td>-49%</td>
</tr>
<tr>
<td>Taiwan International</td>
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<td>-2,200</td>
<td>-2,600</td>
<td>-500</td>
<td>-580</td>
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<td>-17%</td>
<td>-25%</td>
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<tr>
<td>Cross-Strait</td>
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<td>-1,500</td>
<td>-1,500</td>
<td>-190</td>
<td>-190</td>
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<td>-46%</td>
<td>-55%</td>
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<tr>
<td>Sub-total</td>
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<td>-8,500</td>
<td>-8,700</td>
<td>-9,400</td>
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<td>-2,200</td>
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<td>-27%</td>
<td>-36%</td>
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<td>Grand total</td>
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<td>-44%</td>
<td>-39%</td>
<td>-46%</td>
<td>-39%</td>
<td>-39%</td>
</tr>
</tbody>
</table>
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

### Scope of analysis

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic within mainland China</td>
<td>-76,100</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Number of seats offered by airlines (000)</th>
<th>Number of passengers (000)</th>
<th>Gross operating revenues of airlines (USD, million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>Scenario 1</td>
<td>Scenario 1</td>
</tr>
<tr>
<td>-76,100</td>
<td>-66,600</td>
<td>-6,460</td>
</tr>
</tbody>
</table>

**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**

**Source:** ICAO estimates
Potential loss of revenues from Chinese tourists to top 5 States in 1Q 2020

<table>
<thead>
<tr>
<th>Top 5 States that Chinese traveller had the largest share</th>
<th>Baseline</th>
<th></th>
<th>Scenario 1</th>
<th></th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Passenger number</td>
<td>Tourism revenue (in million USD)*</td>
<td>Passenger number</td>
<td>Tourism revenue (in million USD)*</td>
<td>Passenger number</td>
</tr>
<tr>
<td>Australia</td>
<td>460,161</td>
<td>446.36</td>
<td>340,318</td>
<td>330.11</td>
<td>296,616</td>
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<tr>
<td></td>
<td>Loss</td>
<td>-</td>
<td>-119,843</td>
<td>-116.25</td>
<td>-163,545</td>
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<tr>
<td>France</td>
<td>240,523</td>
<td>233.31</td>
<td>137,867</td>
<td>133.73</td>
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<td>Japan</td>
<td>3,181,840</td>
<td>3,086.38</td>
<td>2,167,273</td>
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<tr>
<td></td>
<td>Loss</td>
<td>-</td>
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<td>-984.13</td>
<td>-1,326,806</td>
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<tr>
<td>Thailand</td>
<td>2,772,352</td>
<td>2,689.18</td>
<td>1,826,629</td>
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<td>1,589,458</td>
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<tr>
<td></td>
<td>Loss</td>
<td>-</td>
<td>-945,723</td>
<td>-917.35</td>
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<tr>
<td>United States</td>
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<td>861.46</td>
<td>505,096</td>
<td>489.94</td>
<td>446,707</td>
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<tr>
<td></td>
<td>Loss</td>
<td>-</td>
<td>-383,006</td>
<td>-371.52</td>
<td>-441,395</td>
</tr>
</tbody>
</table>

- 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.
• **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
ICAO estimates

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

Scenario 1
6.4 million passenger reduction

Scenario 2
7.0 million passenger reduction

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

- 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*
ICAO estimates

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

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

Source: ICAO estimates
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

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.
• **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 and Korea, 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 and Korea, respectively); 25 percentage points lower than baseline in March

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* *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
ICAO estimates

Between Iran and China, Italy

Between Iran and other international destinations

720,000 to 810,000 passenger reduction in 1Q 2020 compared to Baseline

Source: ICAO estimates
Approx. USD 110 to 130 million potential loss of airline revenues for 1Q 2020 compared to Baseline

- **Scenario 1: USD 110 million reduction**
  - 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)

- **Scenario 2: USD 130 million reduction**
  - Between Italy and China, Italy:
  - Other internal destinations:
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*

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