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

Montréal, Canada
31 March 2020

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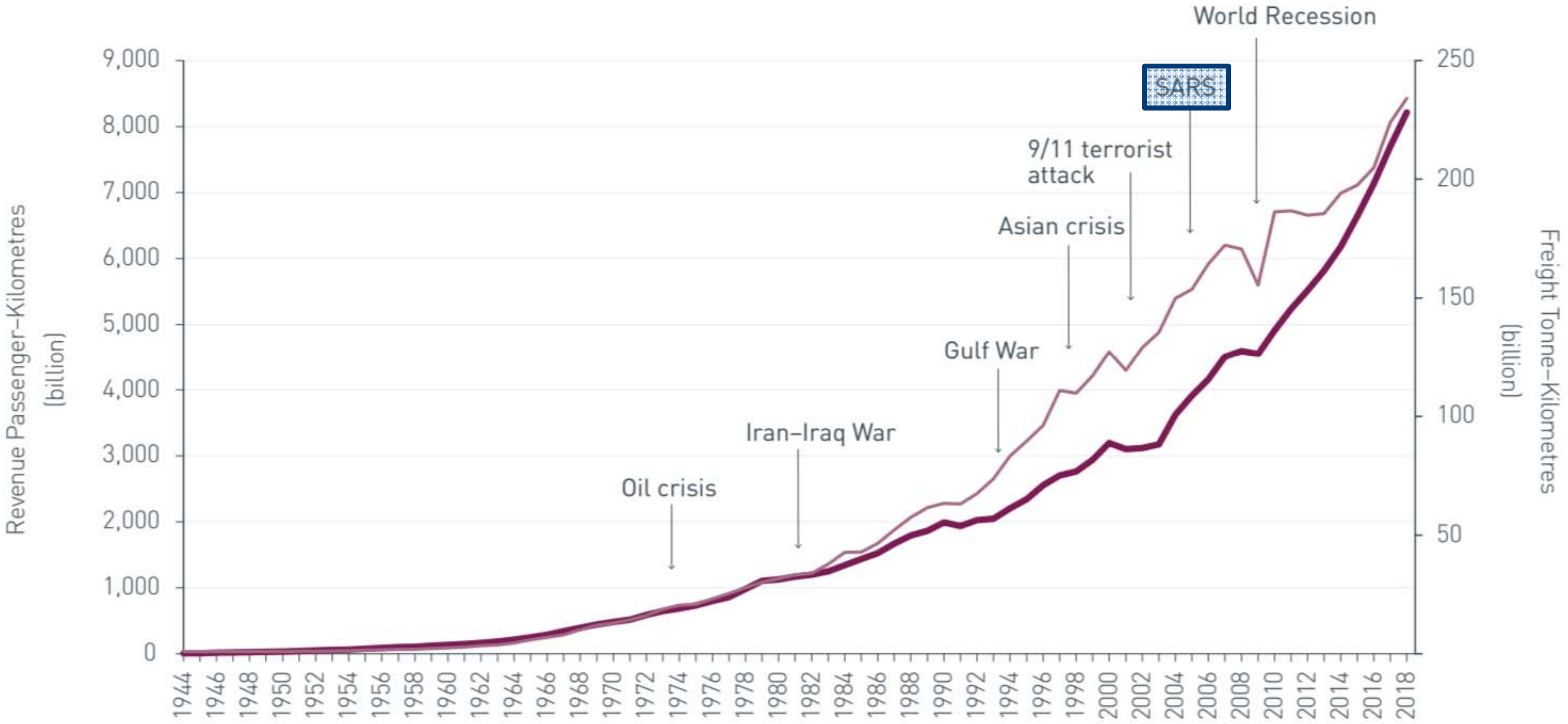
The preliminary estimates indicate the COVID-19 impact on scheduled international passenger traffic during first half 2020, compared to Baseline (originally-planned):

- Overall reduction of **37 to 47% of seats offered by airlines**
- Overall reduction of **401 to 528 million passengers**
- Approx. **USD 88 to 116 billion potential loss** of gross operating revenues of airlines

depending upon the V- or U-shaped path

# Introduction, Background and Situation Overview

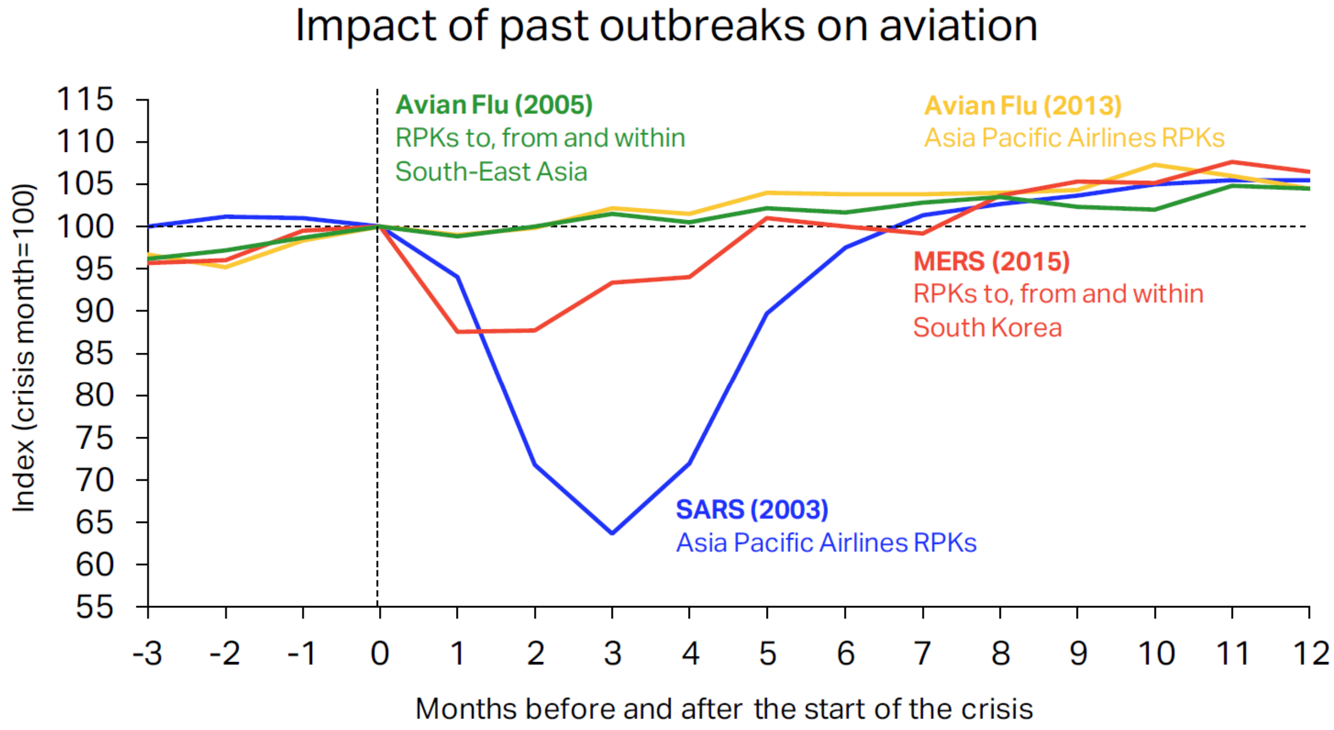
# Air traffic has been vulnerable to external factors including disease outbreaks




**Source**: ICAO Annual Report of the Council

Scheduled commercial traffic
Total (international and domestic) services

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




*Source: IATA Economics*

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

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

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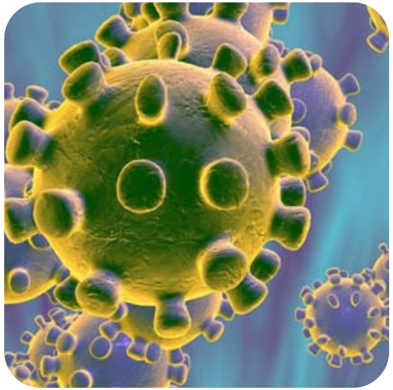
# Disease outbreak directly impacts air traffic and revenues of aviation industry



**Number of cases / countries affected**

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

**Traffic decline**

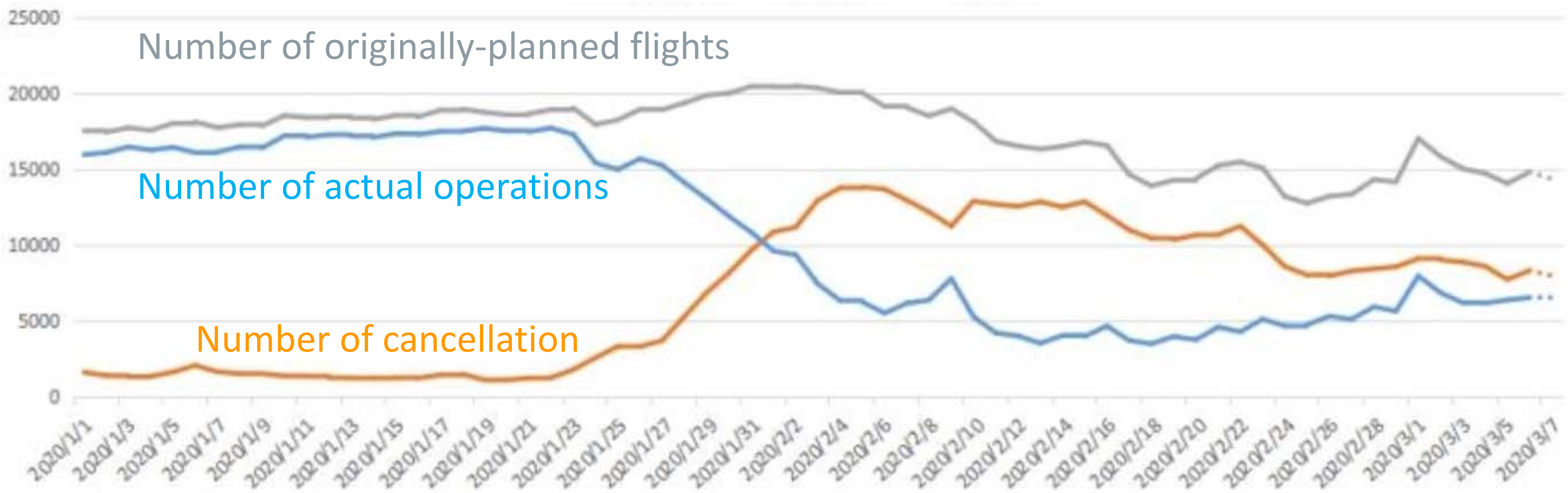
- Fewer flights
- Lower load factors
- Impact on yield

**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/VariFlight (retrieved on 9 March 2020)

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

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

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

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

- State/Territory with 100 to 999 confirmed cases*
- State/Territory with 1,000 to 9,999 confirmed cases*
- State/Territory with 10,000 to 49,999 confirmed cases*
- State/Territory with 50,000 or more confirmed cases*

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

**Source**: OAG scheduled data adjusted by ICAO estimates

# COVID-19 Pandemic was declared and accelerating in March 2020

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

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

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

State/Territory with 100 to 999 confirmed cases*

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

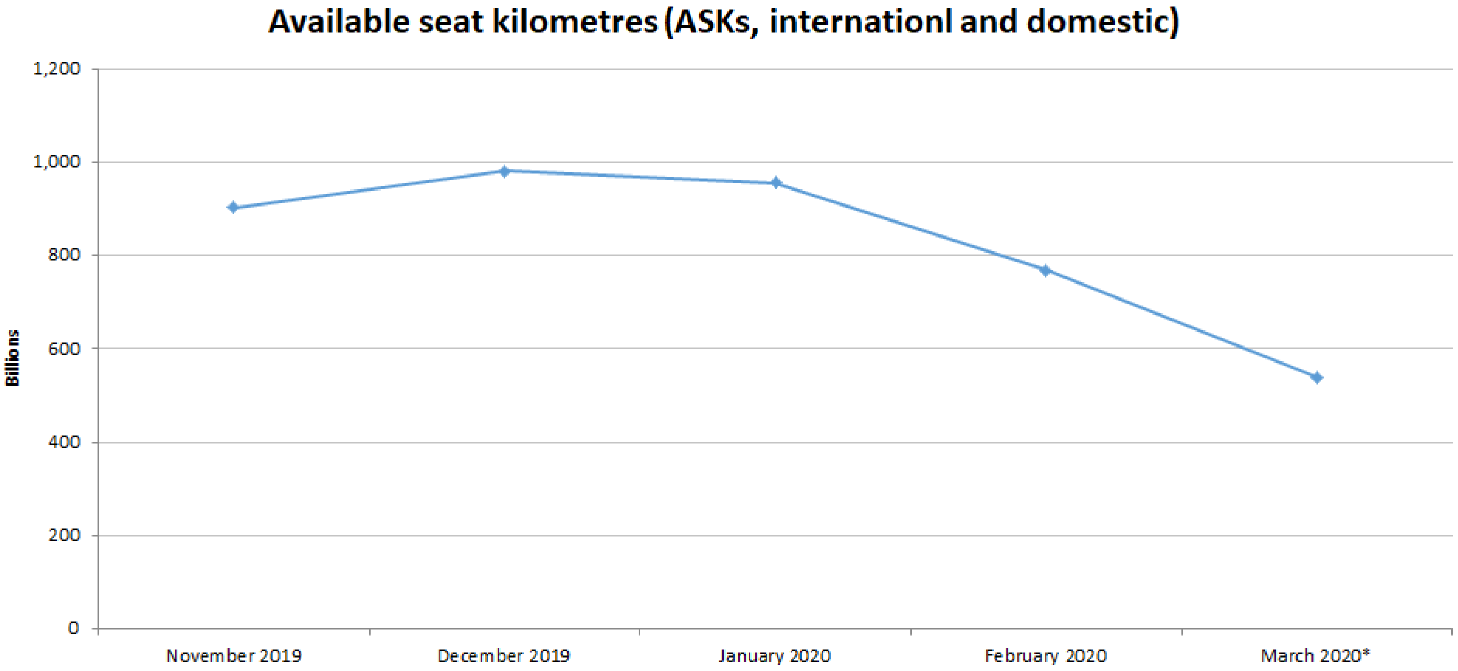
State/Territory with 10,000 to 49,999 confirmed cases*

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

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

**Source**: OAG scheduled data adjusted by ICAO estimates

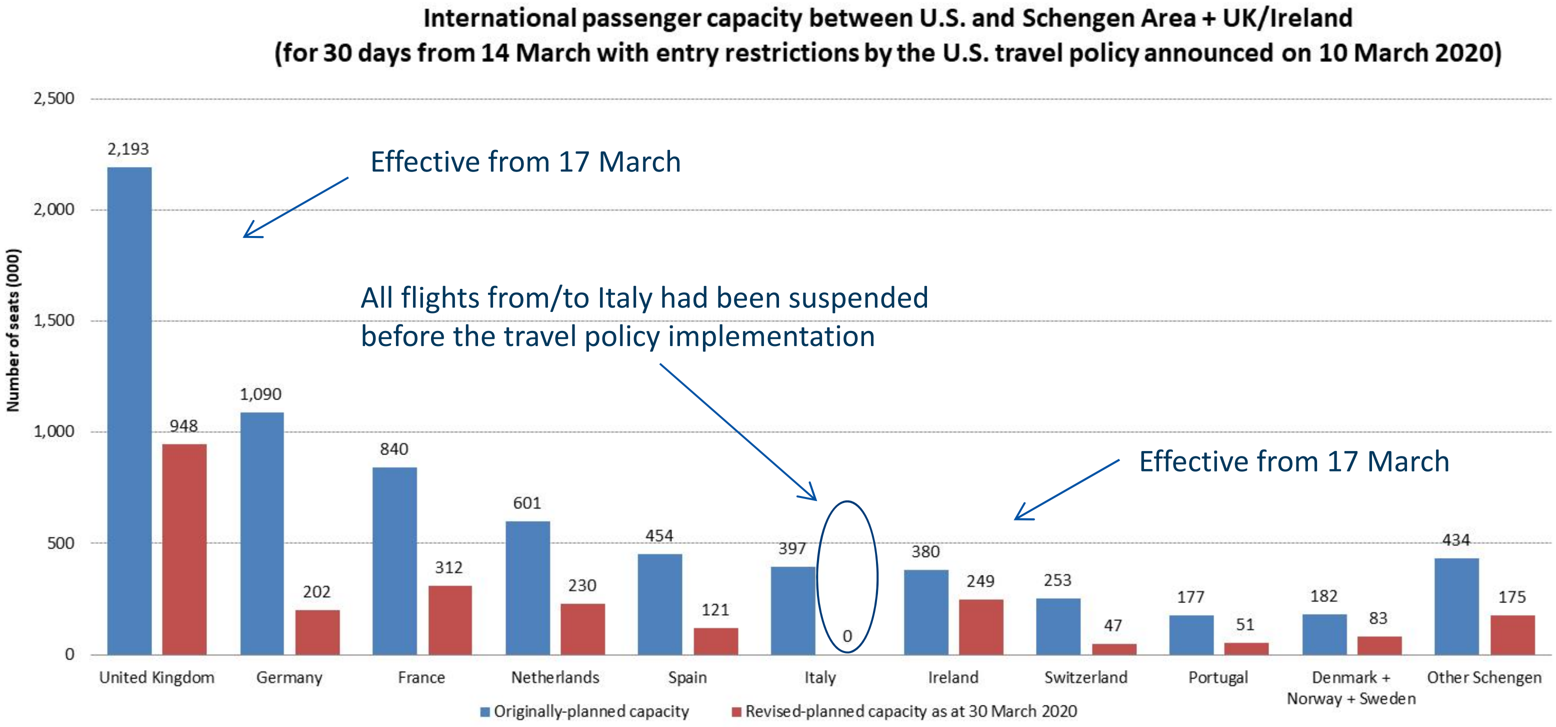
# Air traffic reduction no longer limited to initial outbreak countries




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




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

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

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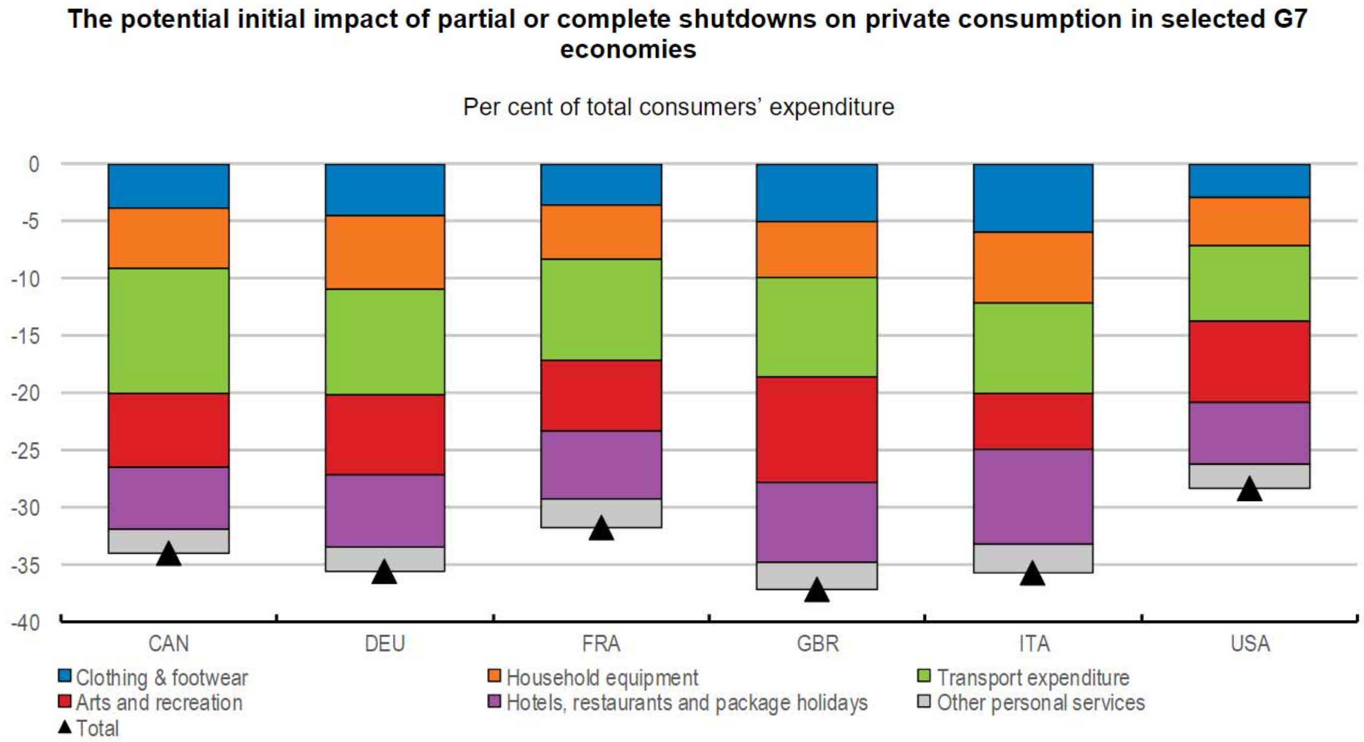
# Sharp decrease in consumers' expenditures for air travel due to containment measures



# Global Level Analysis

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

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

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

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

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

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

# Impact on International Passenger Traffic

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

**Scenario 1 (V-shaped path)**

- Overall reduction of **37% of seats offered by airlines**
- Overall reduction of **401 million passengers**
- Approx. **USD 88 billion potential loss** of gross operating revenues of airlines

**Scenario 2 (U-shaped path)**

- Overall reduction of **47% of seats offered by airlines**
- Overall reduction of **528 million passengers**
- Approx. **USD 116 billion potential loss** of gross operating revenues of airlines

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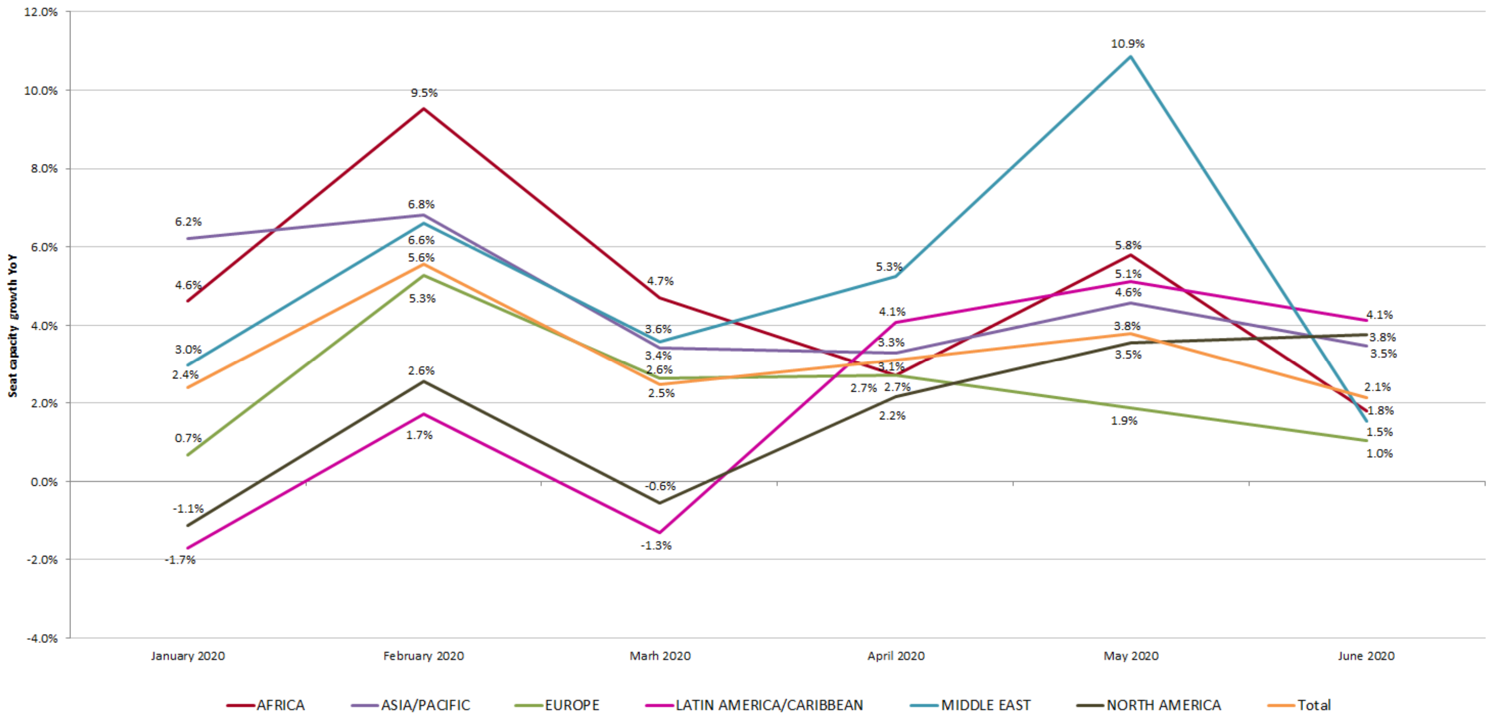
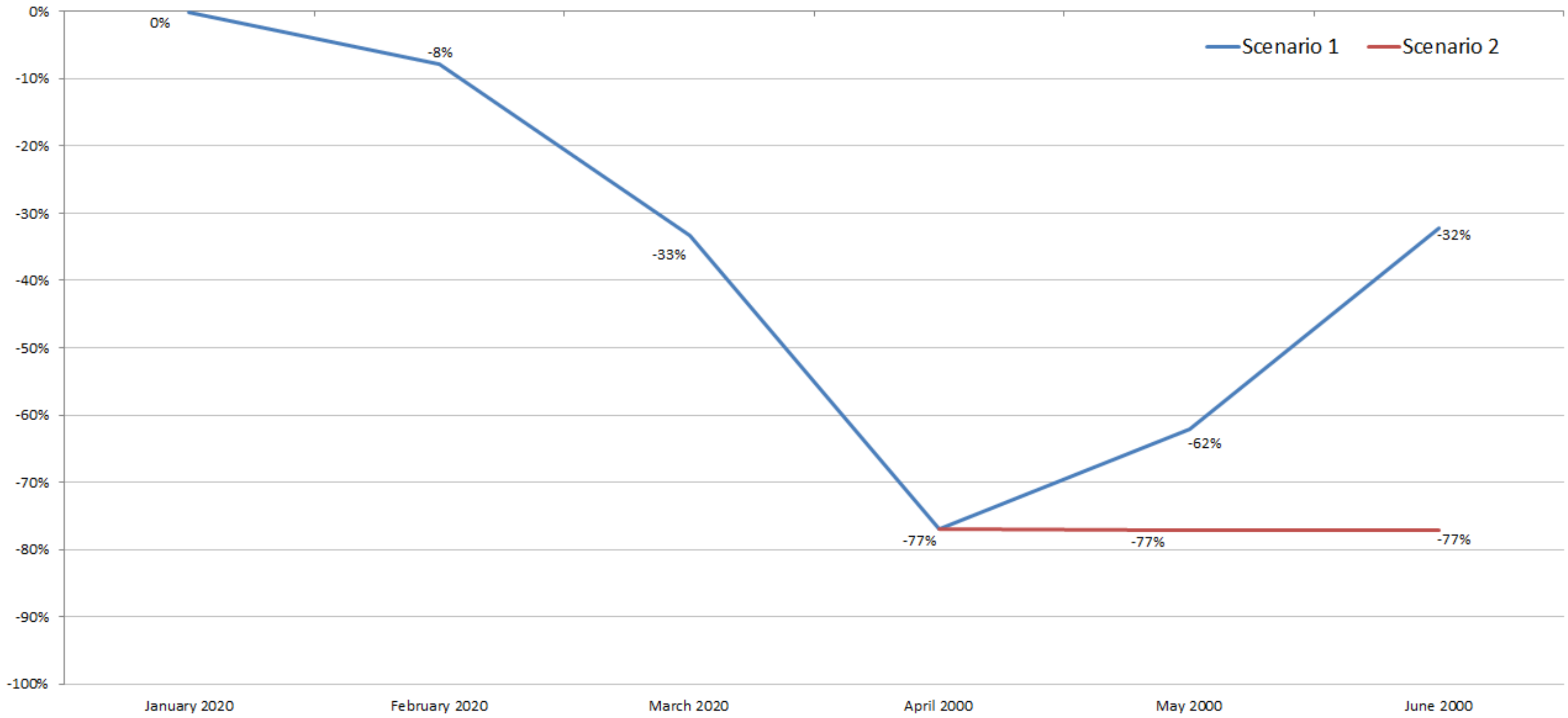
# Baseline: 3% seat capacity increase (year-on-year) globally for first half 2020




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

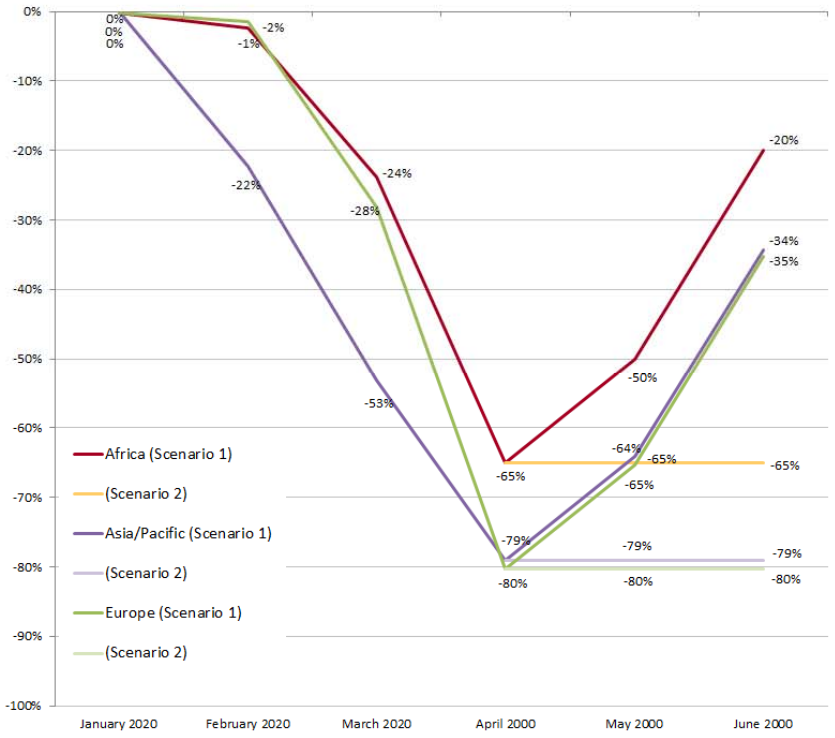
**Source**: OAG scheduled data and ICAO estimates (Apr – Jun 2020)

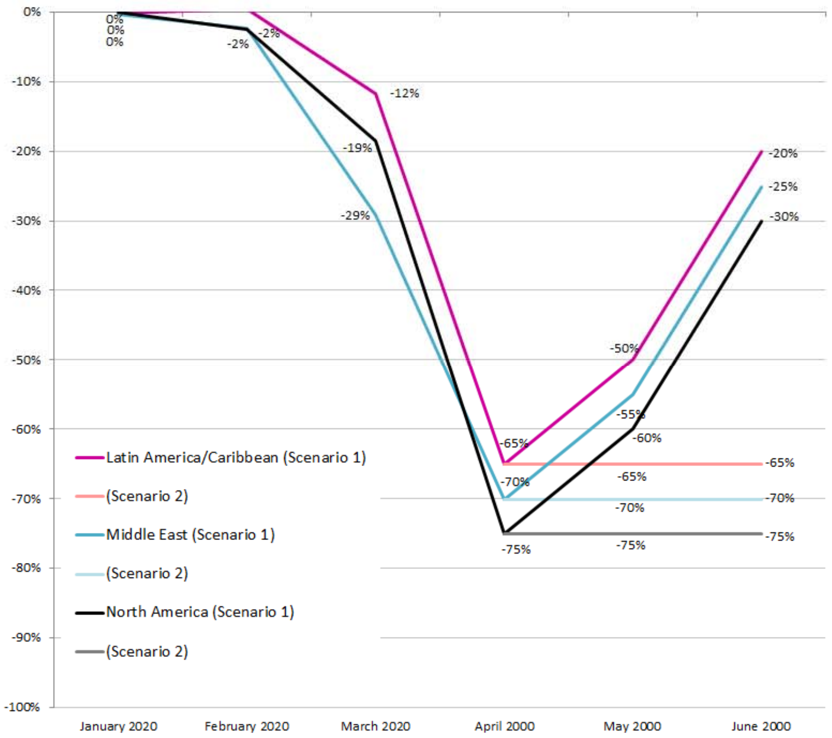
# Scenarios 1 & 2 show 37 to 47 % seat capacity reduction in first half 2020 from Baseline




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

# Break-down of seat capacity by region



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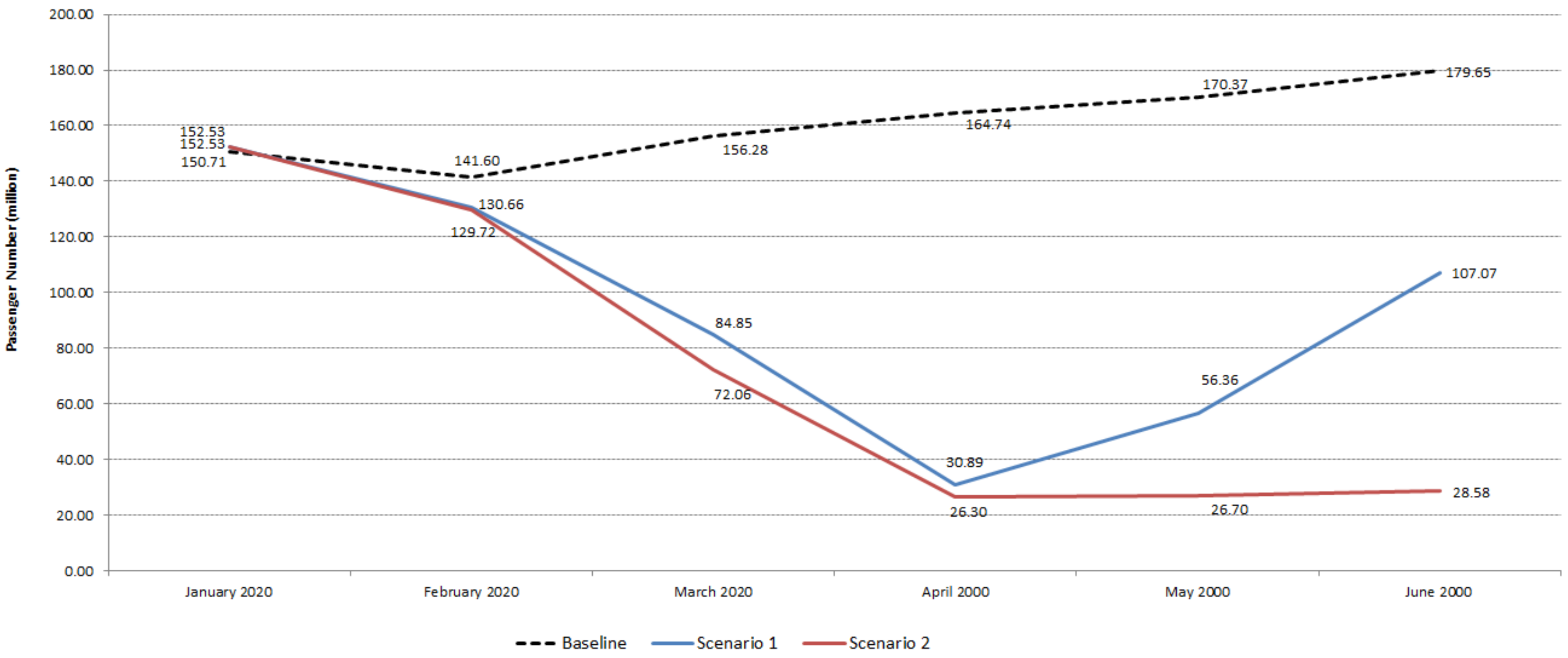
# A total of 401 to 528 million passenger reduction in first half 2020 compared to Baseline




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

**Source**: ICAO estimates

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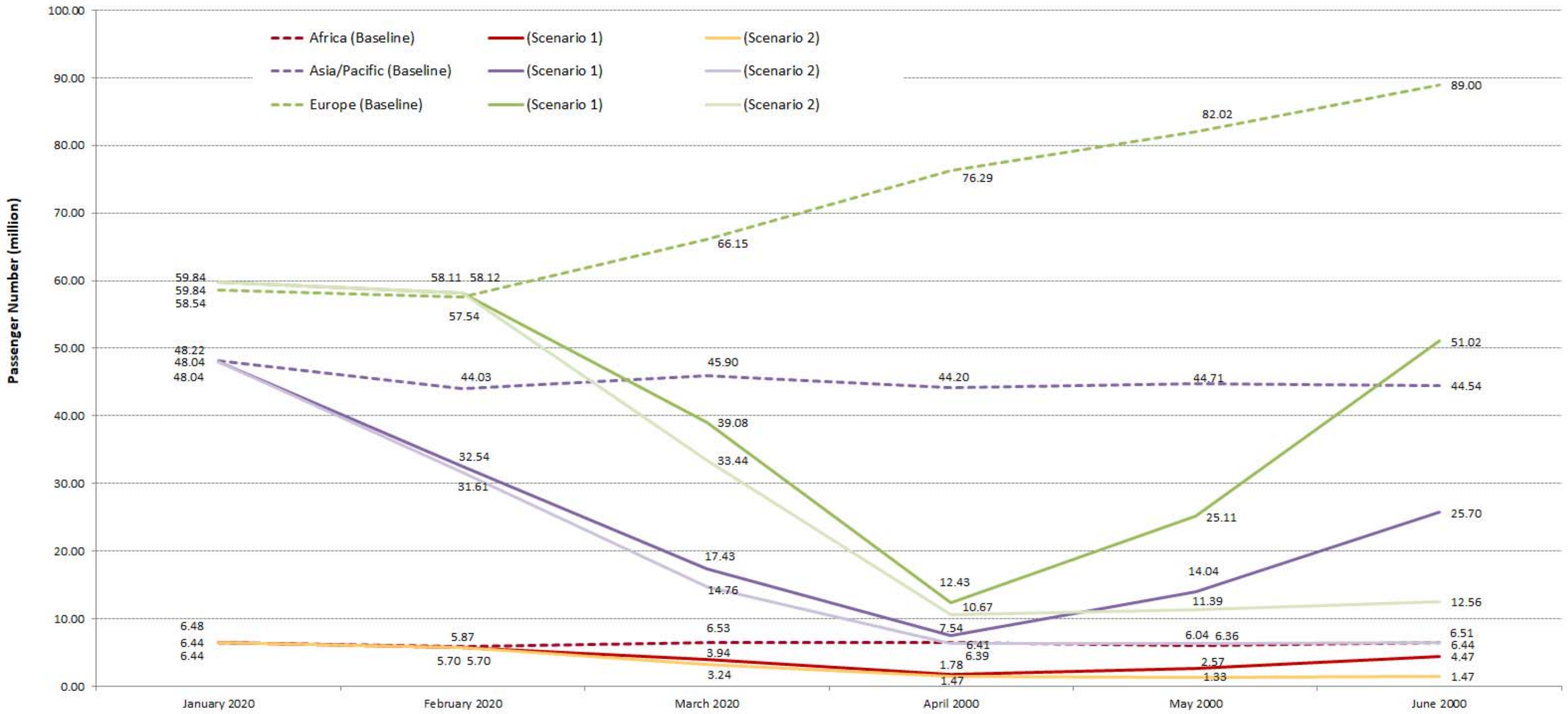
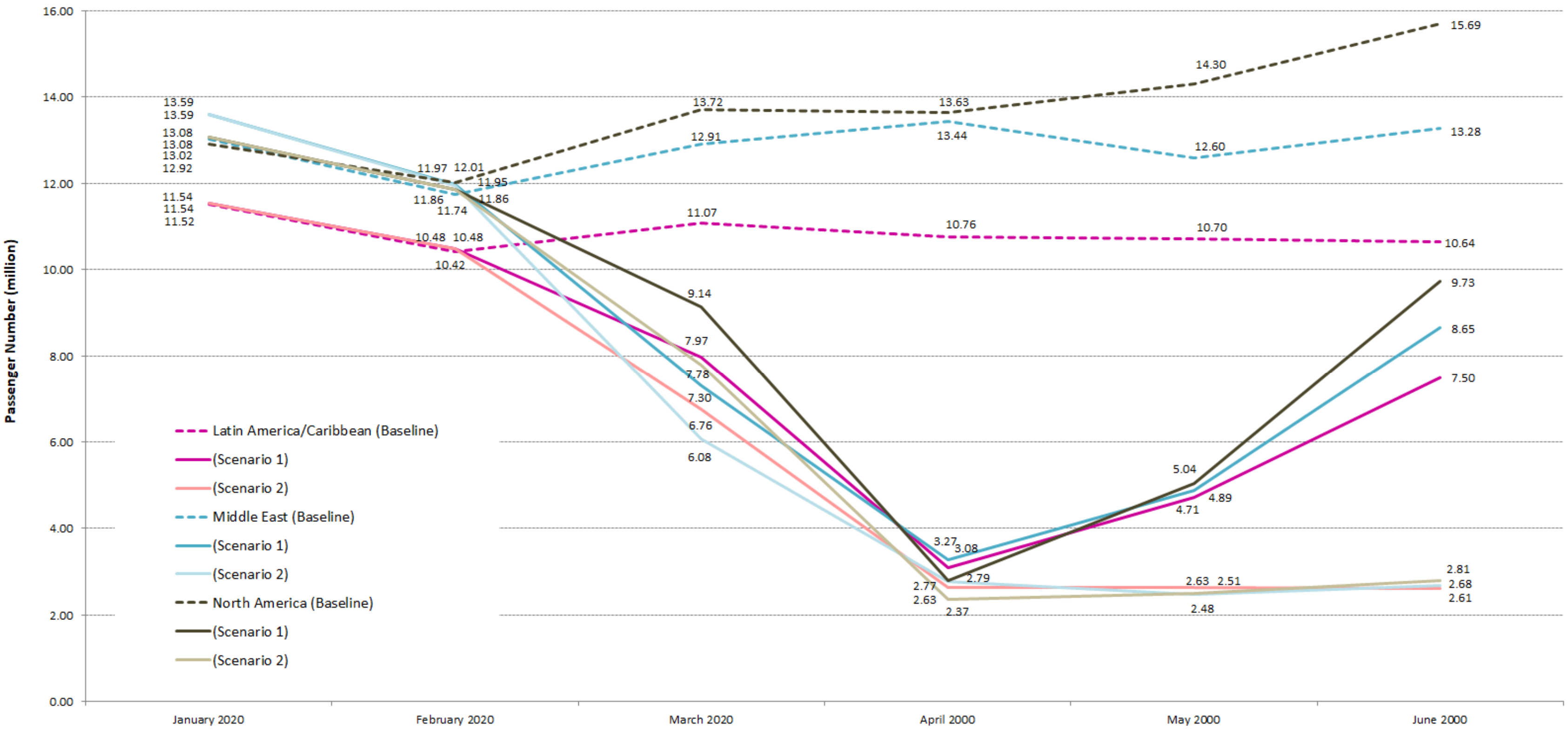
# Break-down of passenger number by region

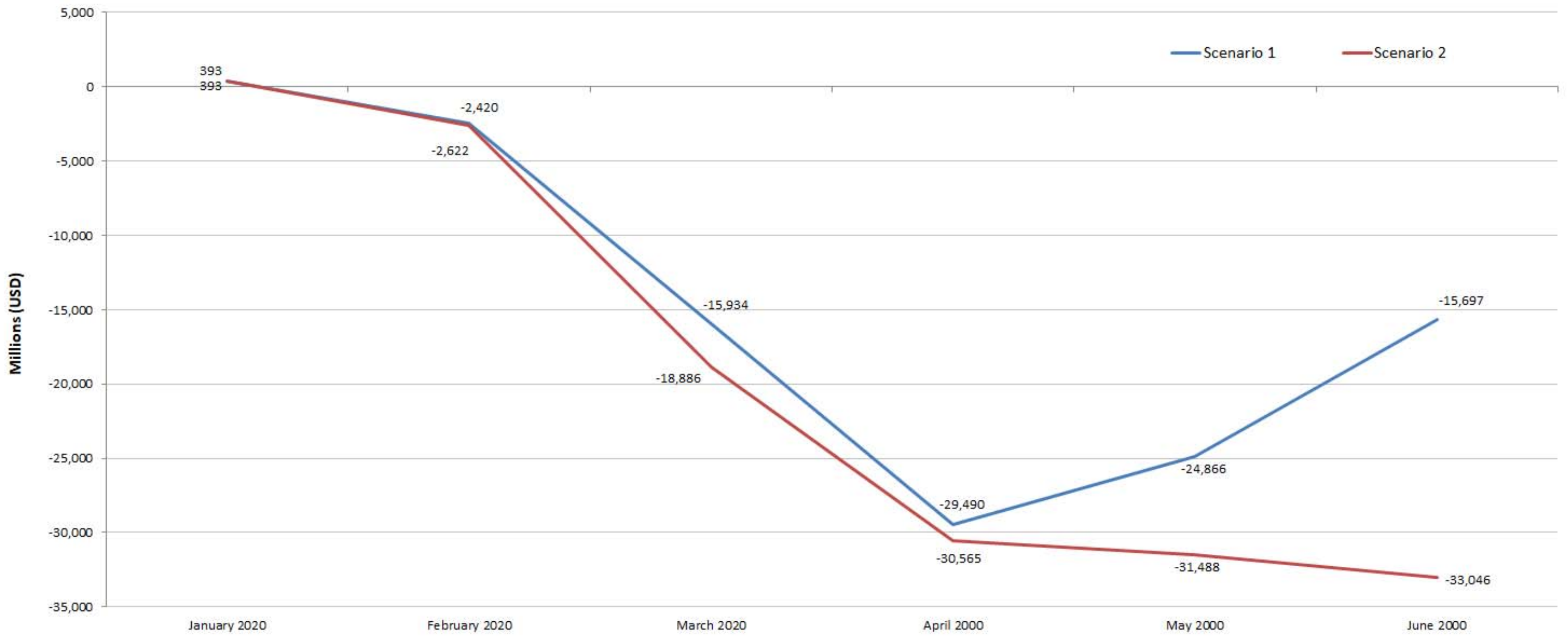



**Source**: ICAO estimates

# Break-down of passenger number by region



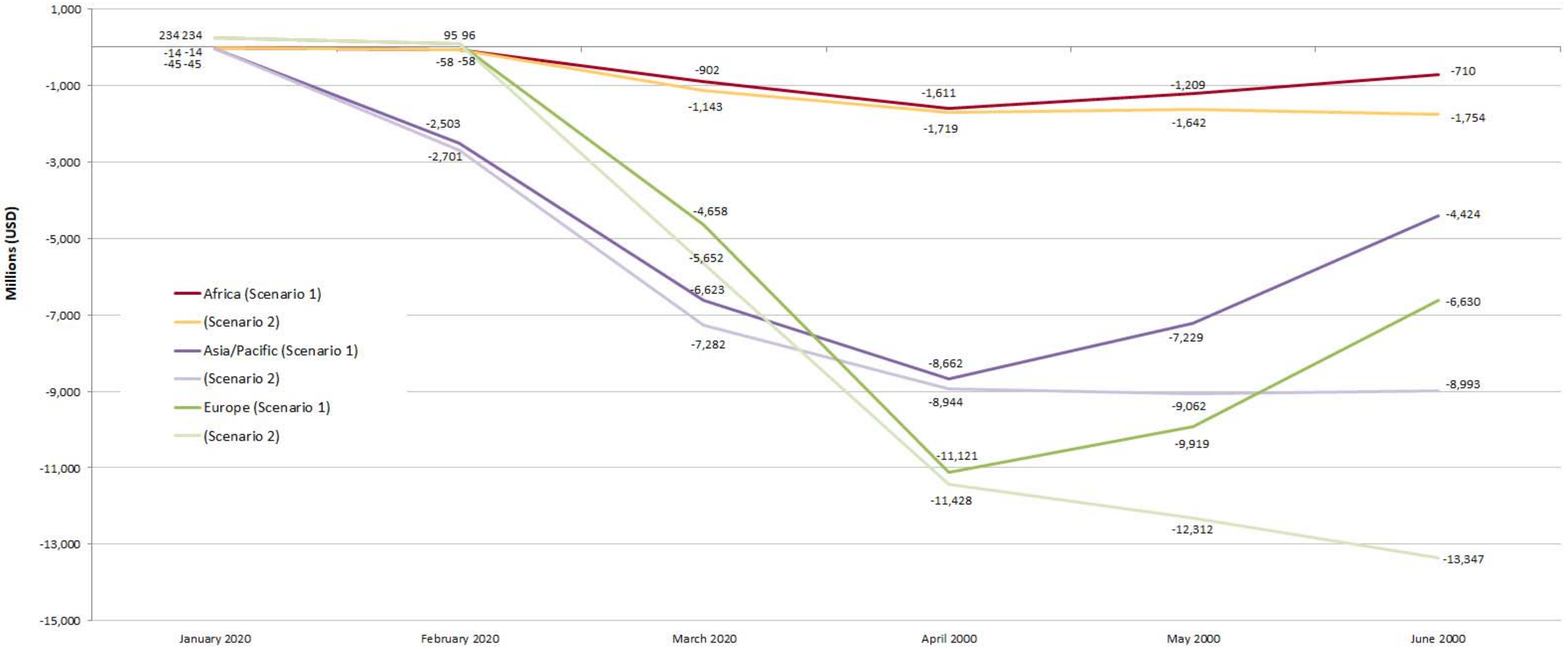
# Approx. USD 88 to 116 billion loss of airline revenues in first half 2020 compared to Baseline




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

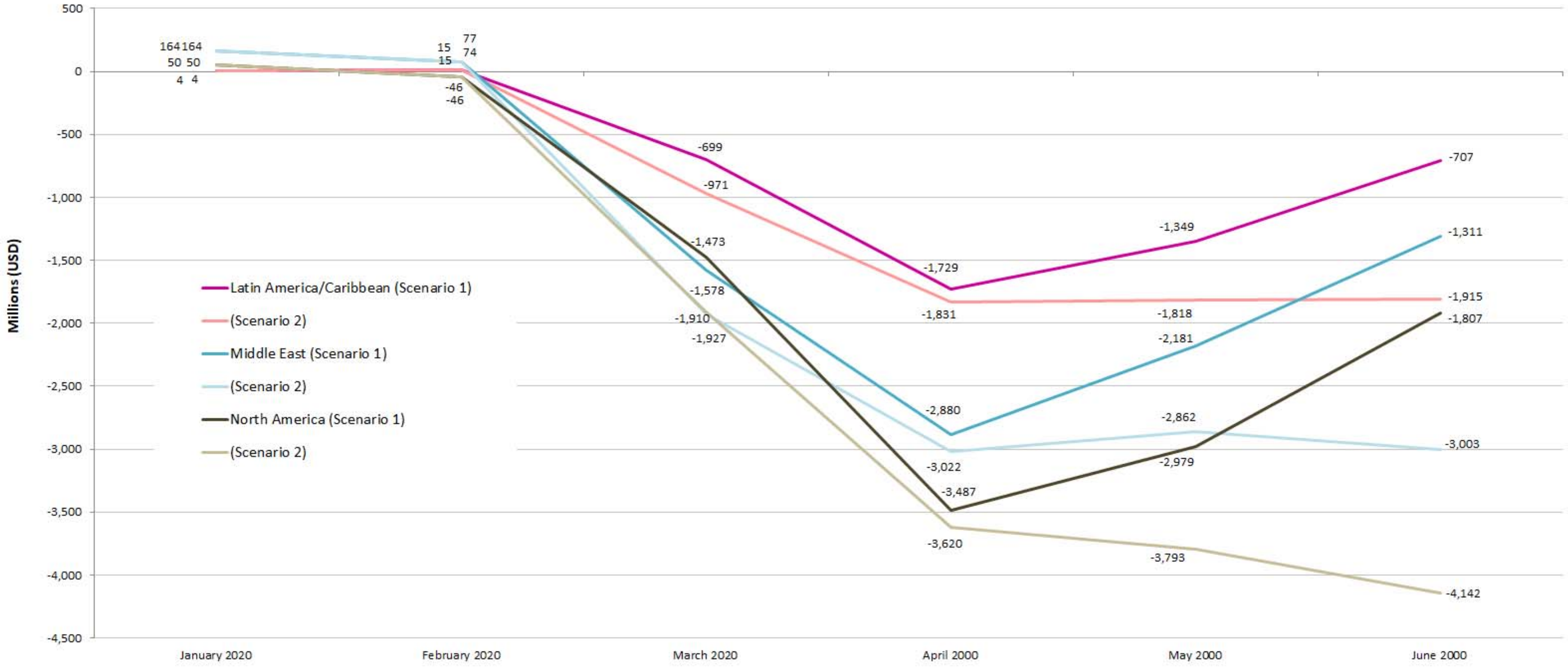
**Source**: ICAO estimates

# Break-down of revenue reduction by region




**Source**: ICAO estimates

# Break-down of revenue reduction by region




**Source**: ICAO estimates

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

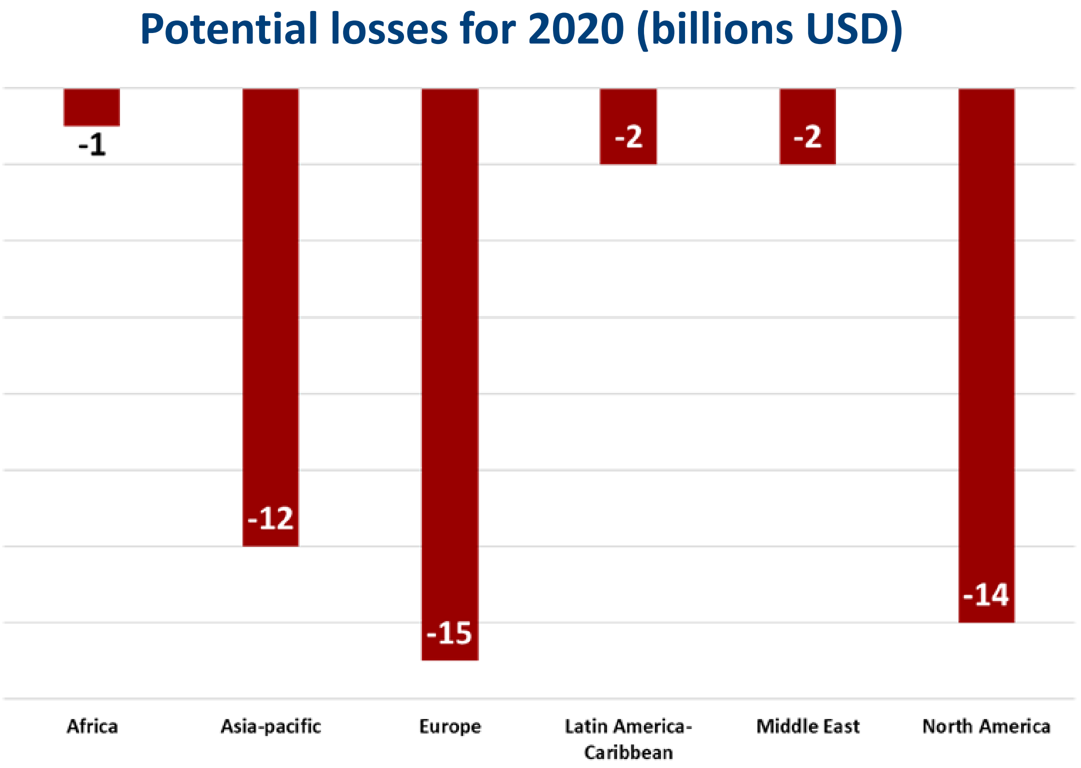
| | **Scenario 1 (V-shaped)** compared to Baseline (originally-planned) for first half 2020 | | | **Scenario 2 (U-shaped)** compared to Baseline (originally-planned) for first half 2020 | | |
|---|---|---|---|---|---|---|
| Region | Seat Capacity (%) | Passenger number (thousand) | Gross passenger revenue (USD, million) | Seat Capacity (%) | Passenger number (thousand) | Gross passenger revenue (USD, million) |
| AFRICA | -26.9% | -12,900 | -4,500 | -37.2% | -18,200 | -6,300 |
| ASIA/PACIFIC | -41.8% | -126,300 | -29,500 | -51.6% | -158,000 | -37,000 |
| EUROPE | -38.2% | -183,900 | -32,000 | -50.0% | -243,500 | -42,400 |
| LATIN AMERICA/CARIBBEAN | -24.0% | -19,800 | -4,500 | -33.6% | -28,500 | -6,400 |
| MIDDLE EAST | -30.4% | -27,300 | -7,700 | -40.5% | -37,400 | -10,600 |
| NORTH AMERICA | -31.8% | -30,600 | -9,900 | -42.5% | -41,900 | -13,500 |
| **Total** | **-36.5%** | **-401,000** | **-88,000** | **-47.3%** | **-527,500** | **-116,200** |

**Source**: ICAO estimates

# Impacts on Airports and Tourism

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

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




Total airport industry losses:
**> USD 46 billion**

Decline in industry revenues:
**>25%**

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

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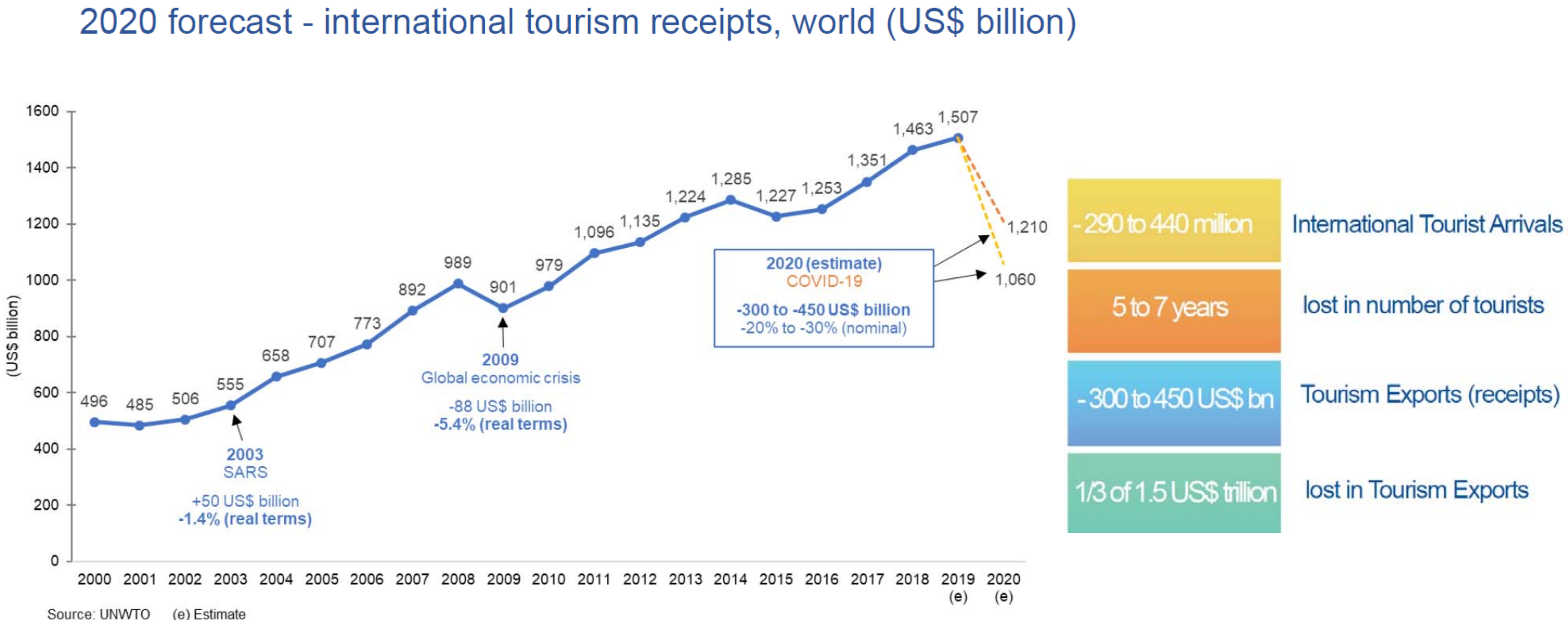
# A loss of USD 300 to 450 billion in international tourism receipts for 2020 (estimated by UNWTO)



# State Level Scenario Analysis

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

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

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

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

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

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

- **China (including Hong Kong/Macao SARs and Taiwan Province)**: 54 to 64% seat capacity reduction, 81 to 97 million passenger reduction, USD 18.3 to 21.9 billion loss of gross operating revenues of airlines from/to the country
- **Republic of Korea**: 44 to 54% seat capacity reduction, 23 to 28 million passenger reduction, USD 4.5 to 5.6 billion loss of gross operating revenues of airlines from/to the country
- **Italy**: 46 to 58% seat capacity reduction, 31 to 39 million passenger reduction, USD 3.8 to 4.8 billion loss of gross operating revenues of airlines from/to the country
- **Iran (Islamic Republic of)**: 39 to 49% seat capacity reduction, 2.2 to 2.8 million passenger reduction, USD 350 to 450 million loss of gross operating revenues of airlines from/to the country

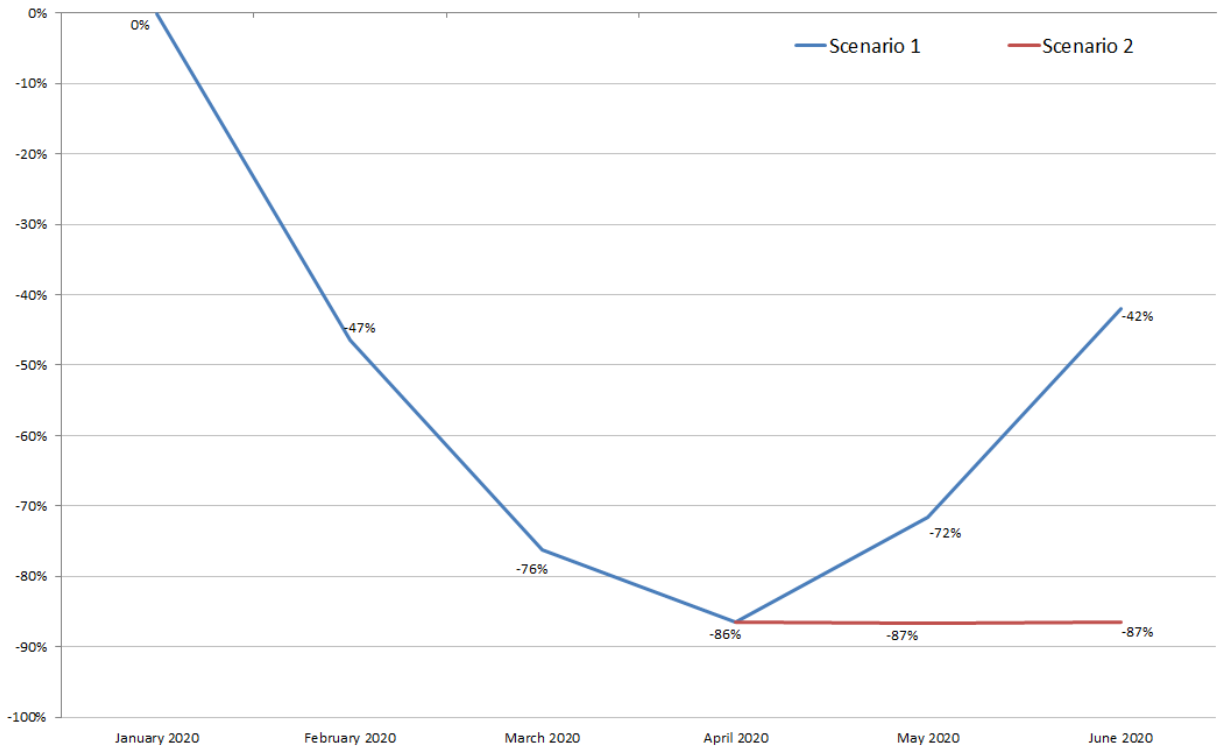
* *Coronavirus Disease 2019 (COVID-19) Situation Report* by WHO as of 15 March 2020

# China

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

- Overall reduction of **54 to 64% of seats offered by airlines**
- Overall reduction of **81 to 97 million passengers**
- Approx. **USD 18.3 to 21.9 billion potential loss** of gross operating revenues of airlines

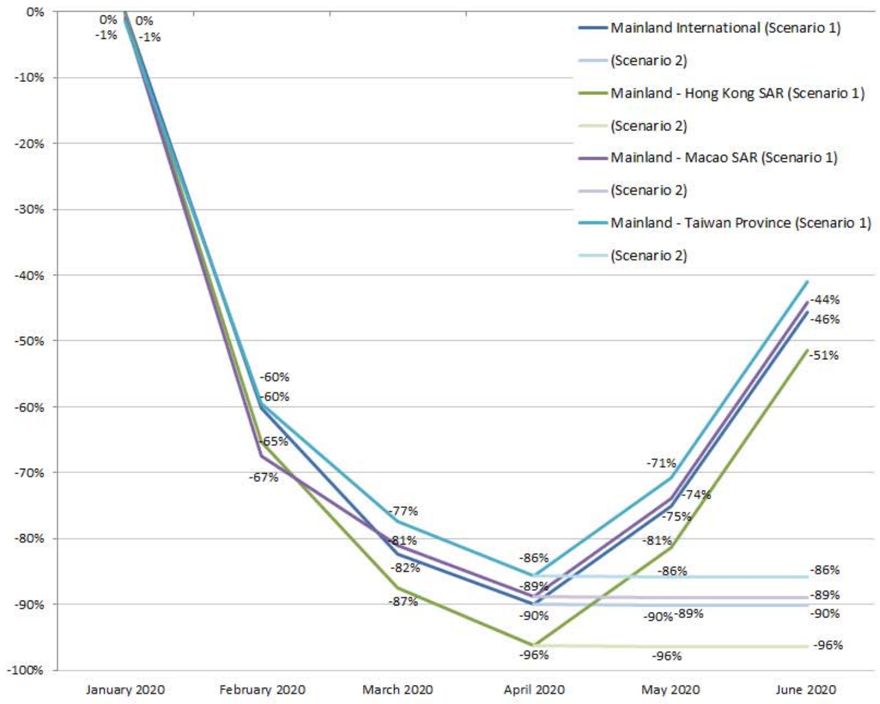
# A total of 54 to 64 % seat capacity reduction in first half 2020 from Baseline

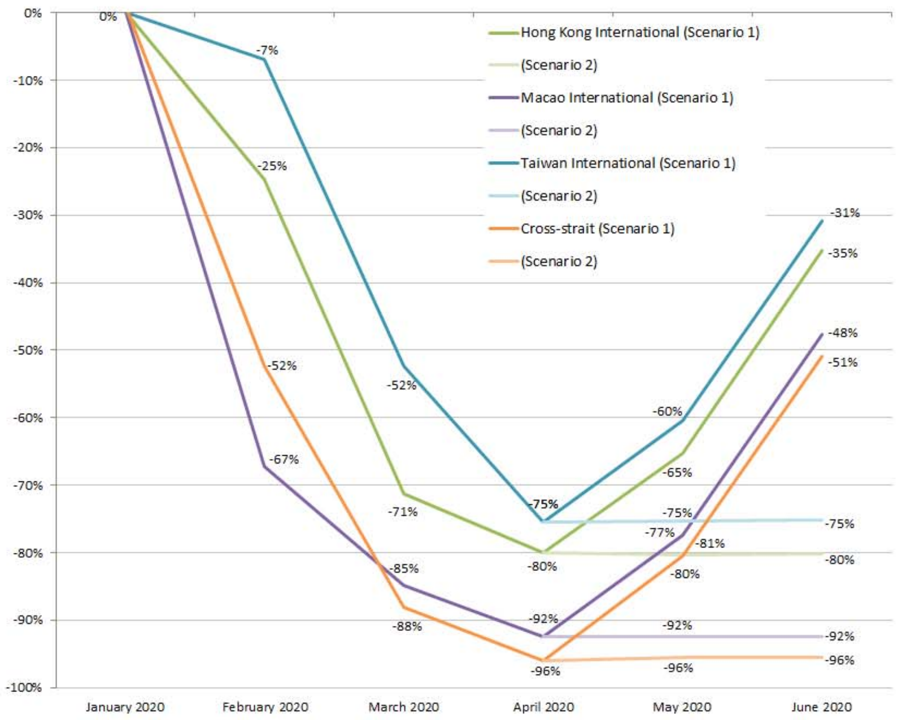



- **"Mainland International"** refers to scheduled international passenger services from/to mainland China, excluding "Regional", "Hong Kong International", "Macao International", "Taiwan International" and "Cross-Strait"
- **"Regional"** refers to scheduled passenger services between mainland China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

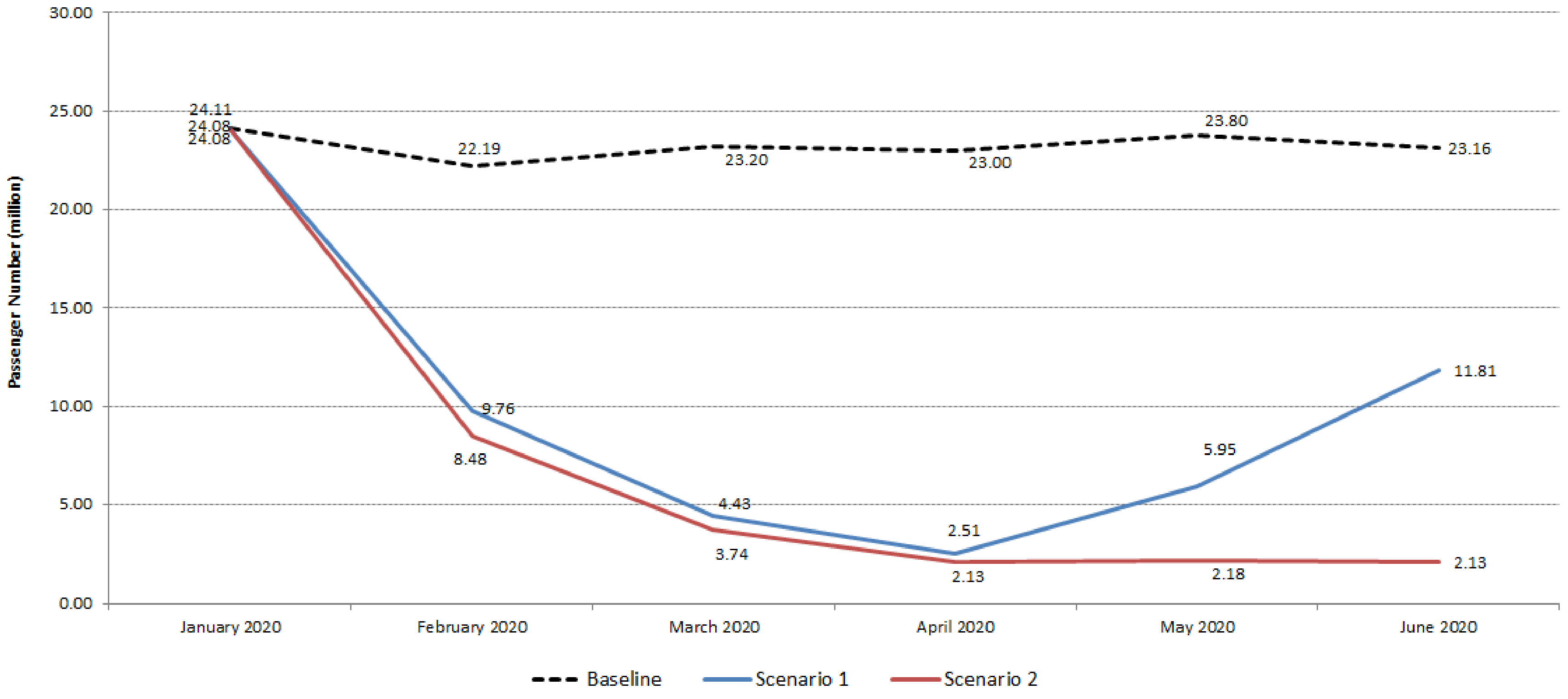
**Source**: ICAO estimates based on OAG, Routes Online and airline websites

# Break-down of seat capacity by route



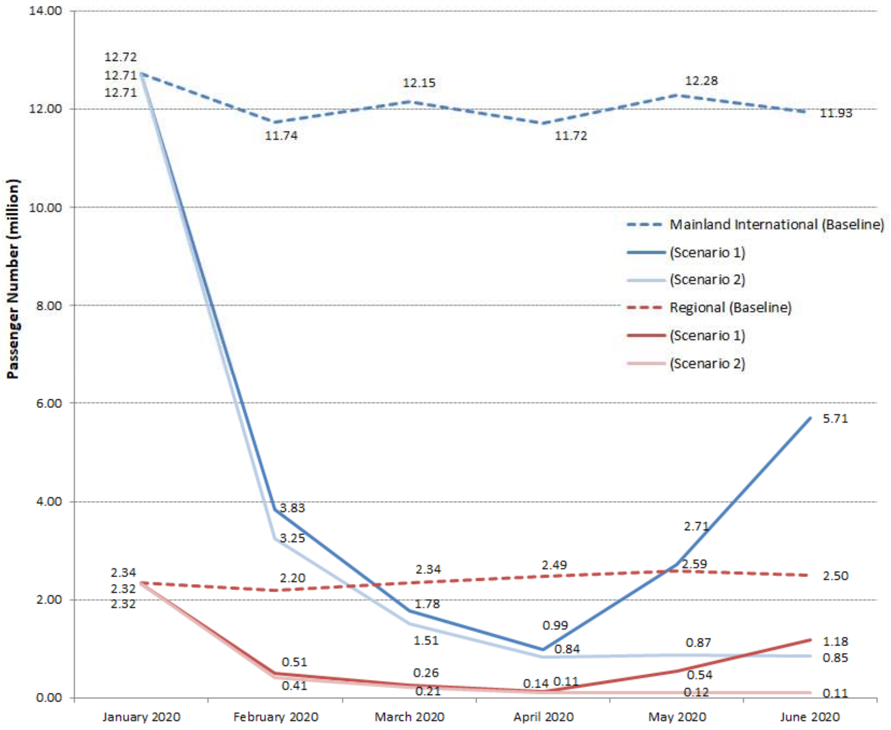



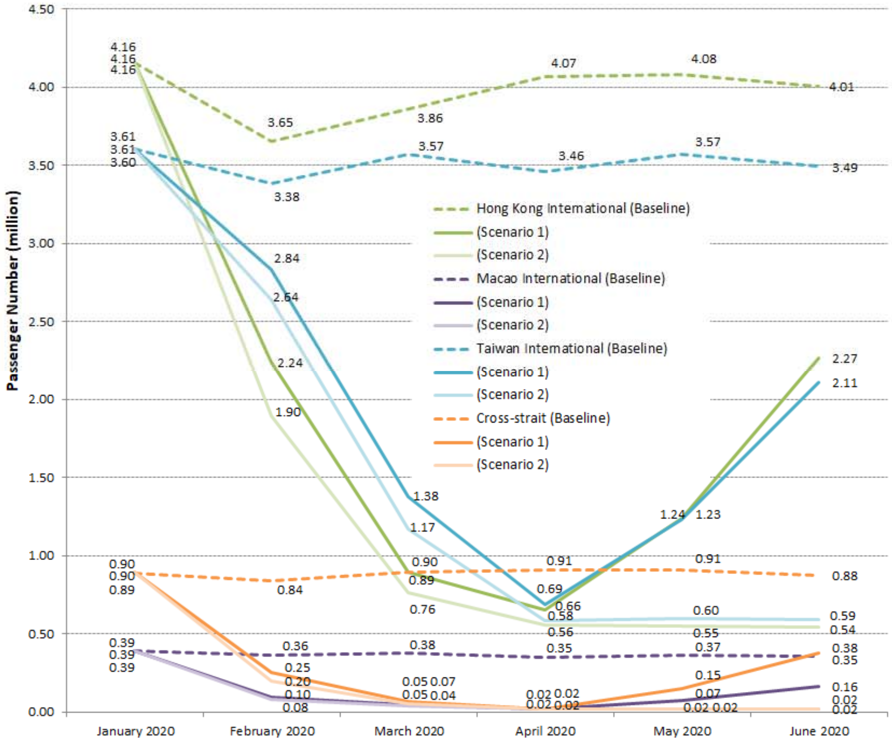
# A total of 81 to 97 million passenger reduction in first half 2020 compared to Baseline




**Source**: ICAO estimates

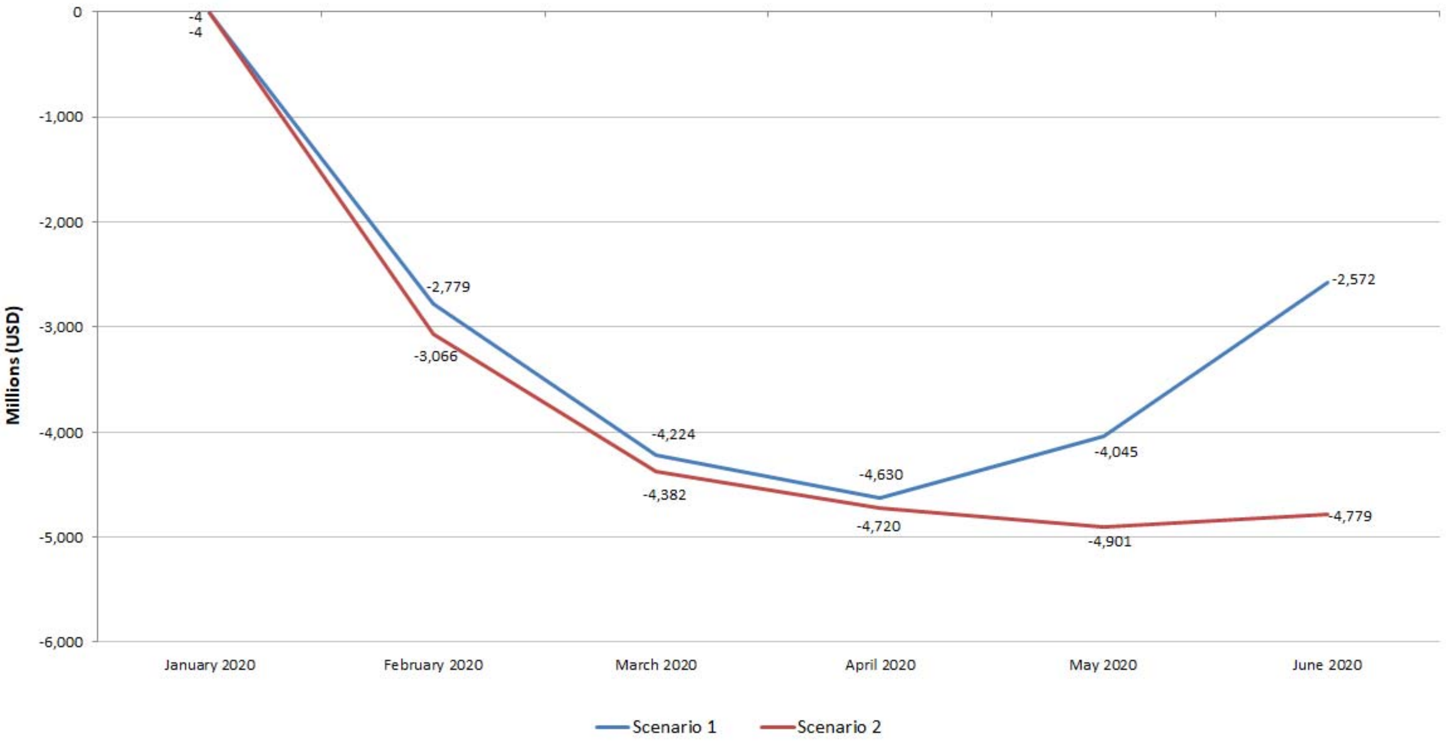
# Break-down of passenger number by route




**Source**: ICAO estimates

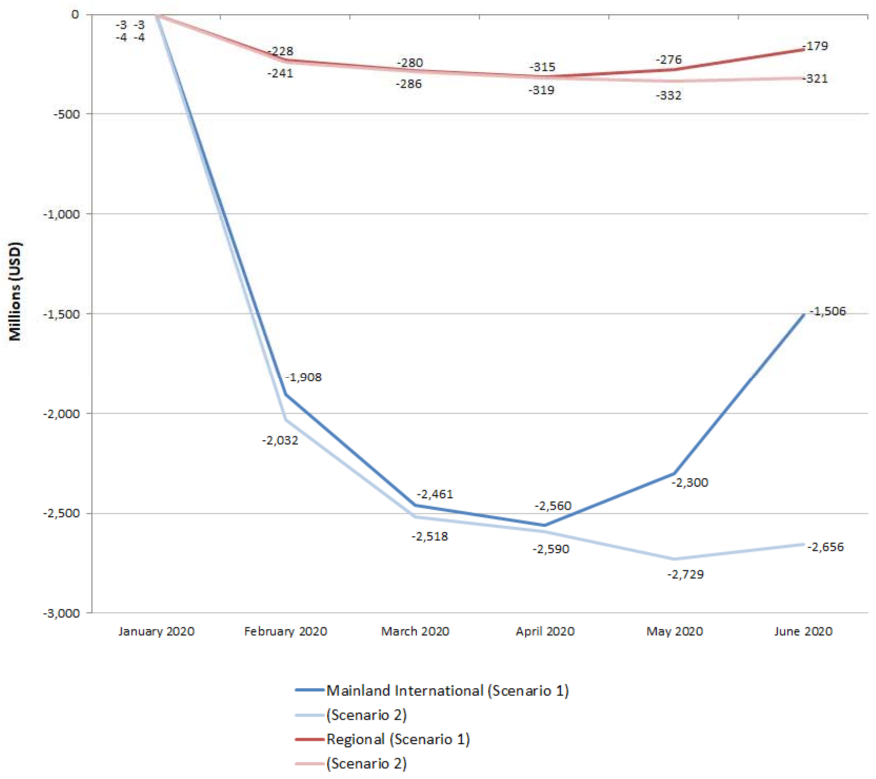
# Approx. USD 18.3 to 21.9 billion loss of airline revenues in first half 2020 compared to Baseline

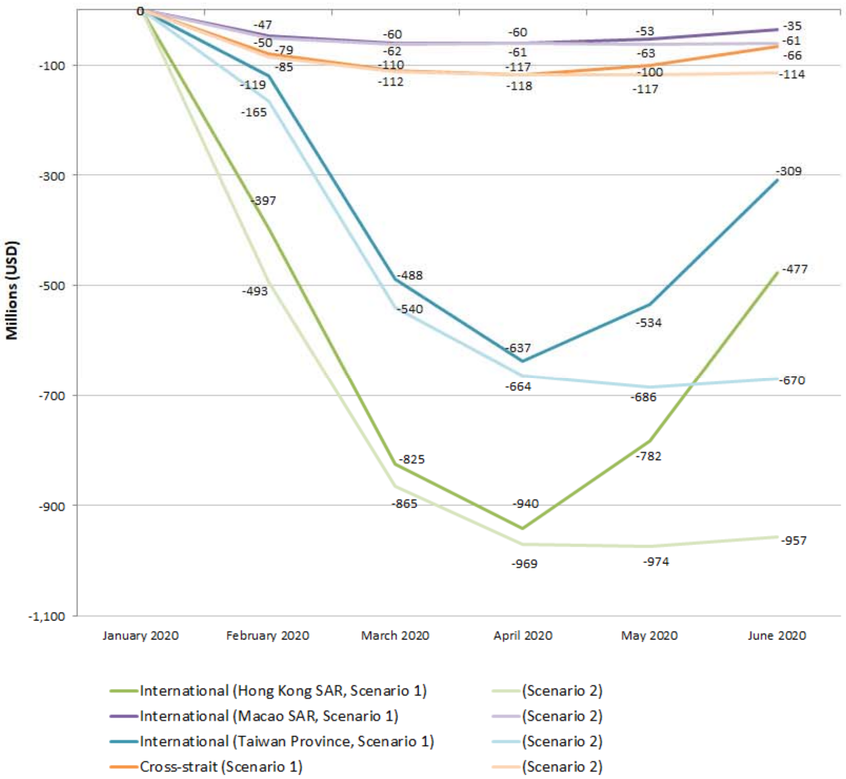



- Mainland international: calculated with an average fare of USD 250 per passenger based on traffic/financial reports of CA, CZ and MU with wide variations by destination (20% lower for LCCs);
- Regional: calculated with an average fare of USD 135 per passenger based on traffic/financial reports of CA,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

**Source**: ICAO estimates

# Break-down of revenue reduction by route



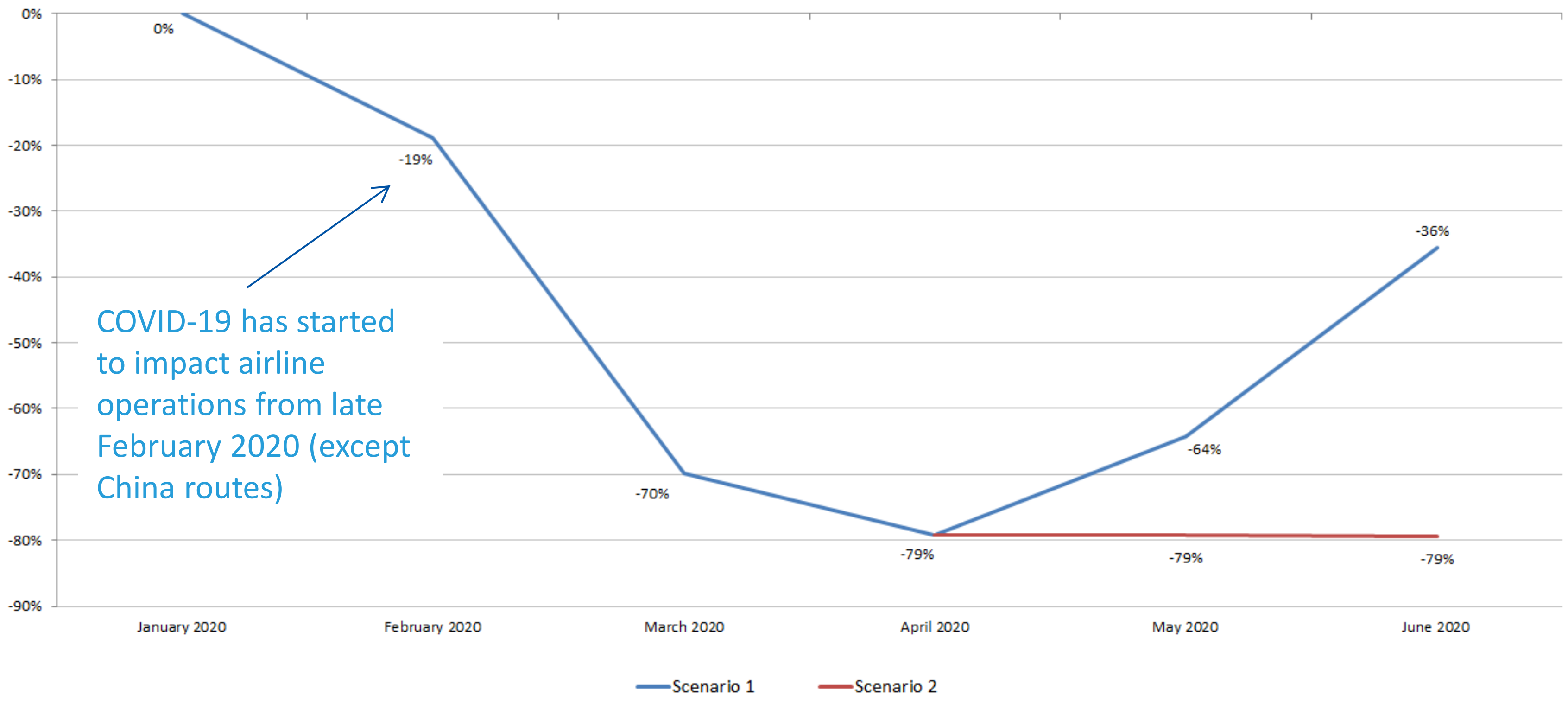

**Source**: ICAO estimates

# Republic of Korea

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

- Overall reduction of **44 to 54% of seats offered by airlines**
- Overall reduction of **23 to 28 million passengers**
- Approx. **USD 4.5 to 5.6 billion potential loss** of gross operating revenues of airlines

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




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

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

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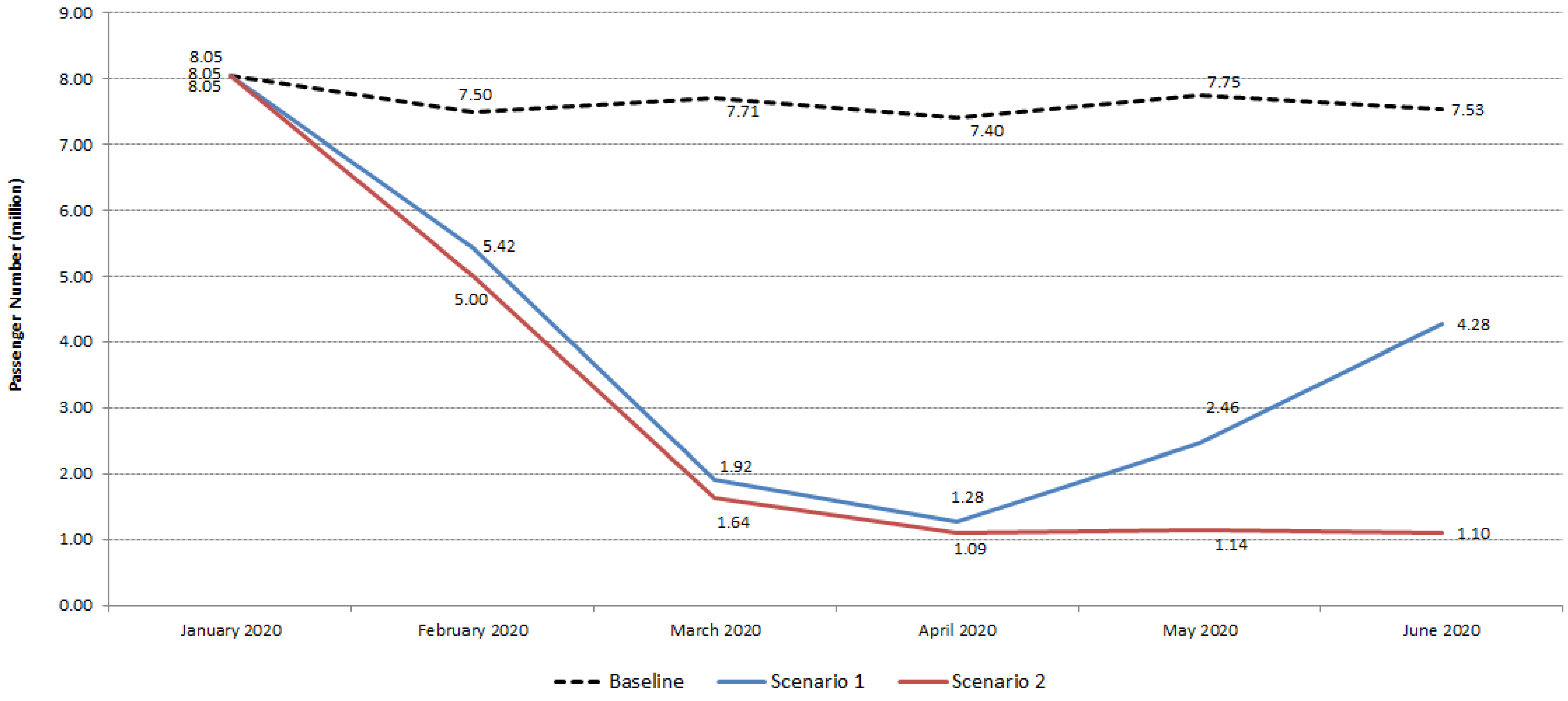
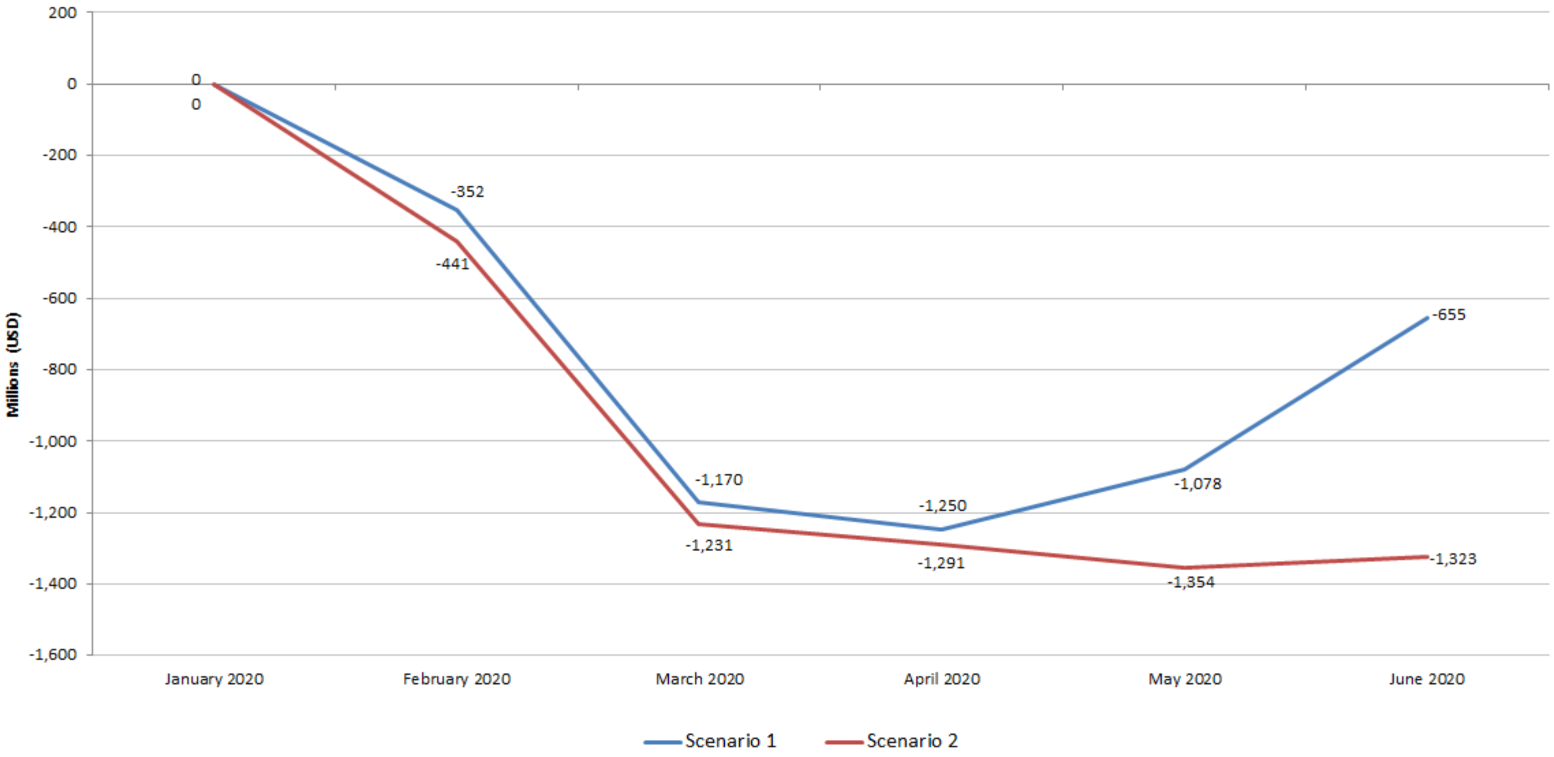
# 23 to 28 million passenger reduction in first half 2020 compared to Baseline



# 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)

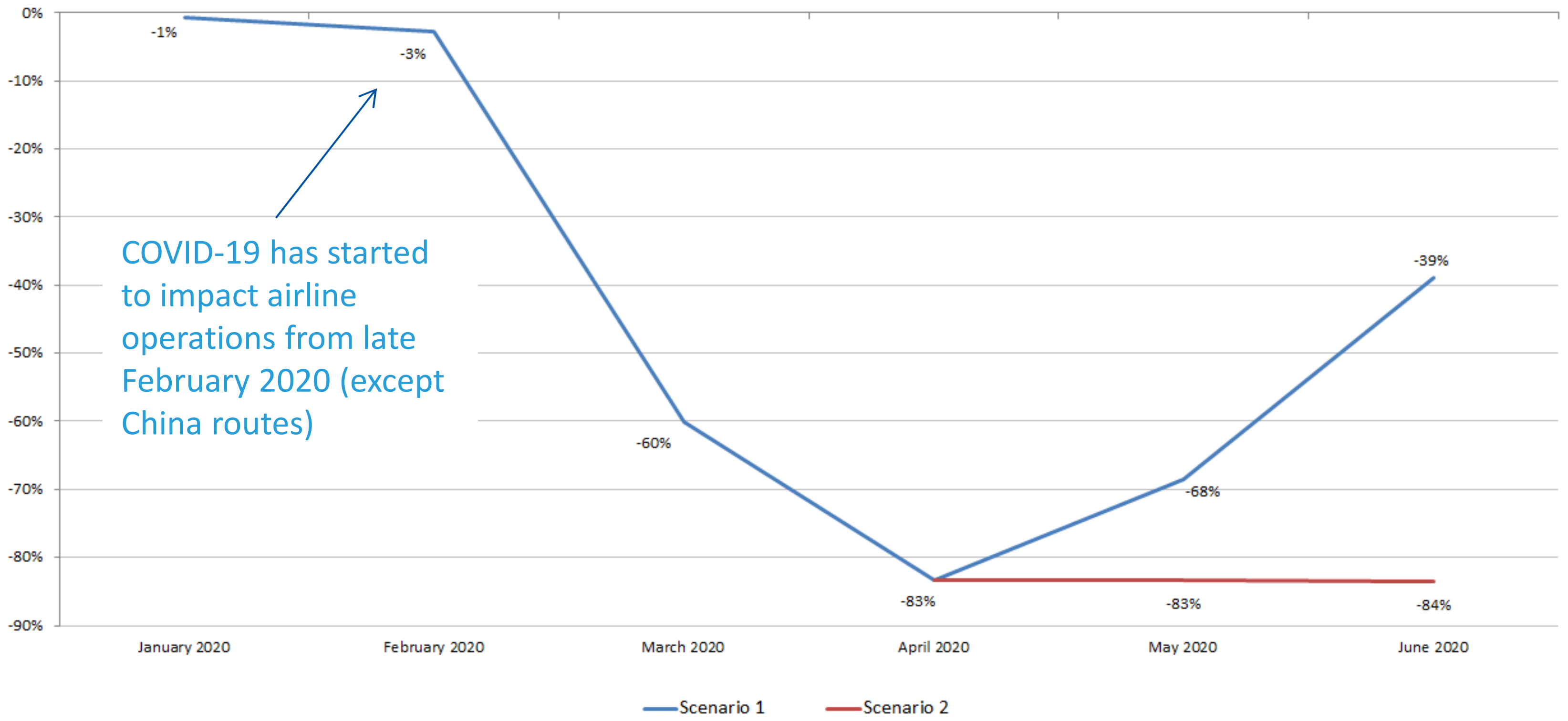
**Source**: ICAO estimates

# 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

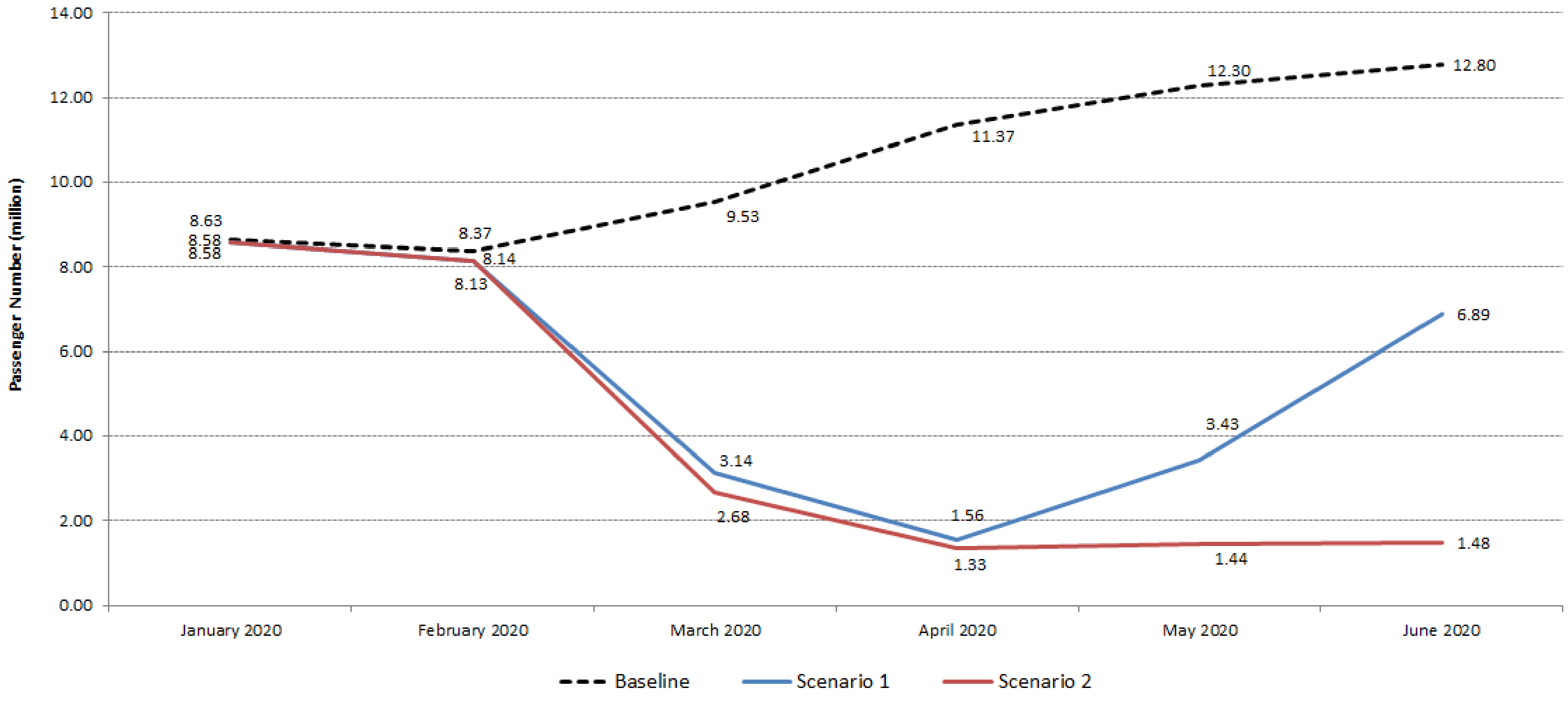
# 46 to 58 % seat capacity reduction in first half 2020 from Baseline




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

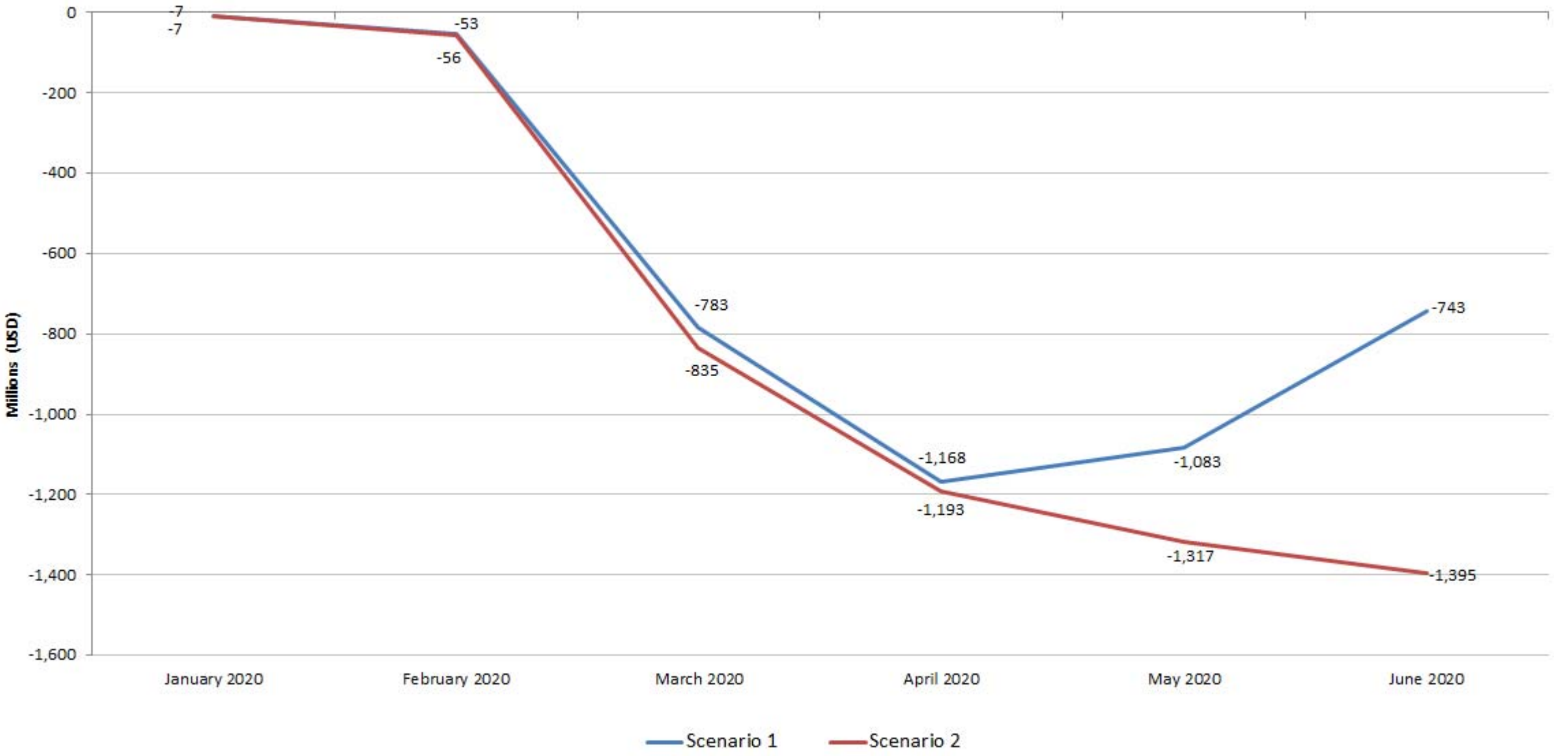
**Source**: ICAO estimates based on OAG, Routes Online and airline websites

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




**Source**: ICAO estimates

# 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)

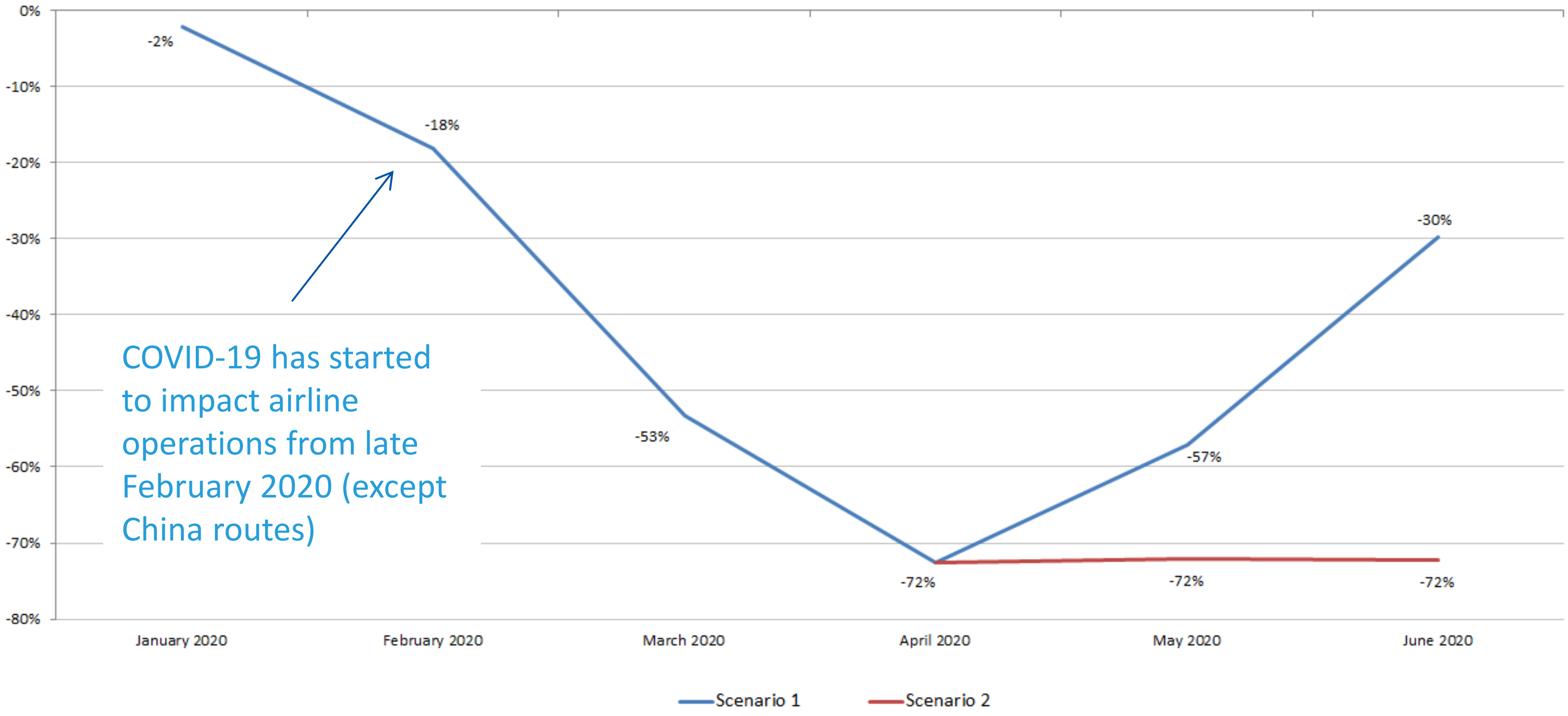
**Source**: ICAO estimates

# 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

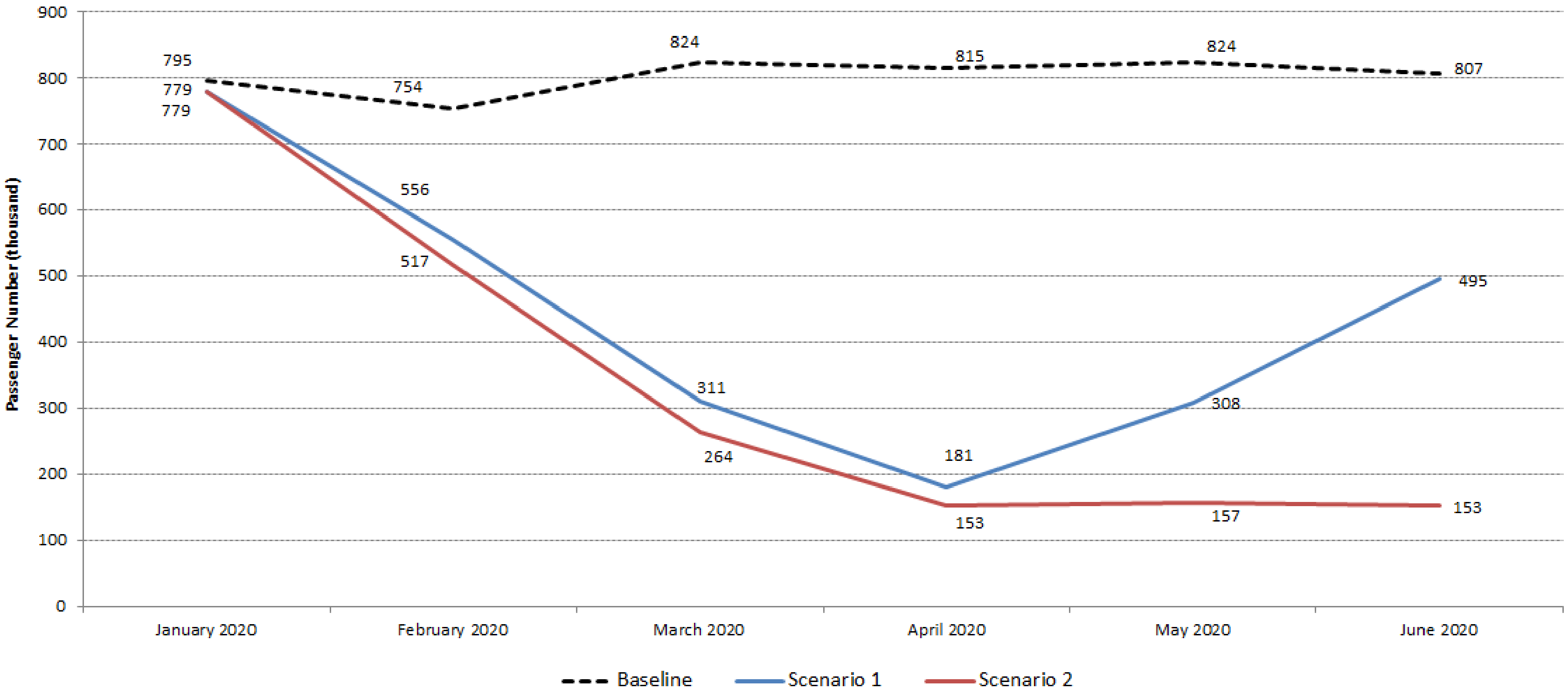
# 39 to 49 % seat capacity reduction in first half 2020 from Baseline




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

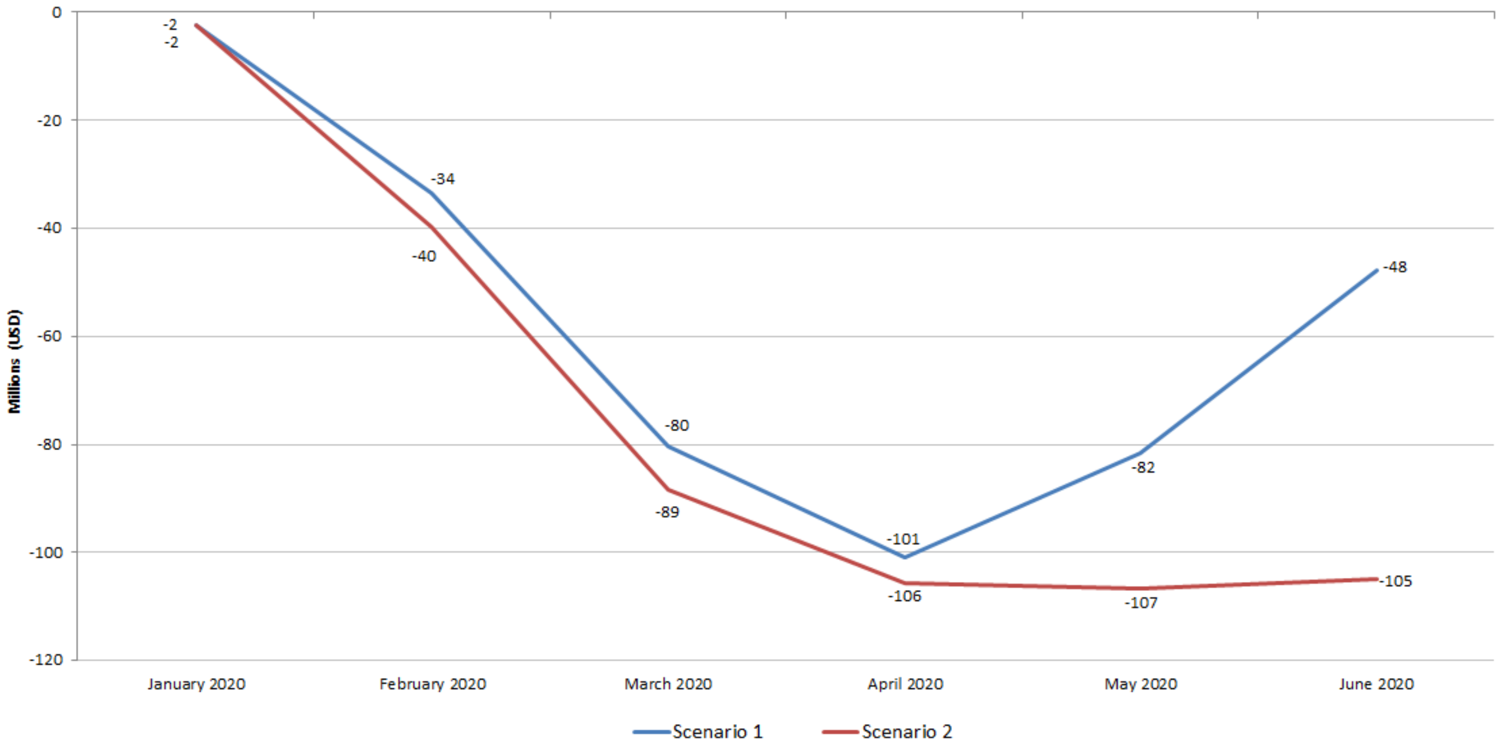
**Source**: ICAO estimates based on OAG, Routes Online and airline websites

# 2.2 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

# Appendix: Scenario assumptions

# Global level analysis

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

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

# China (Mainland International and Regional)

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

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

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

# Republic of Korea

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

# Italy

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

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

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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

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