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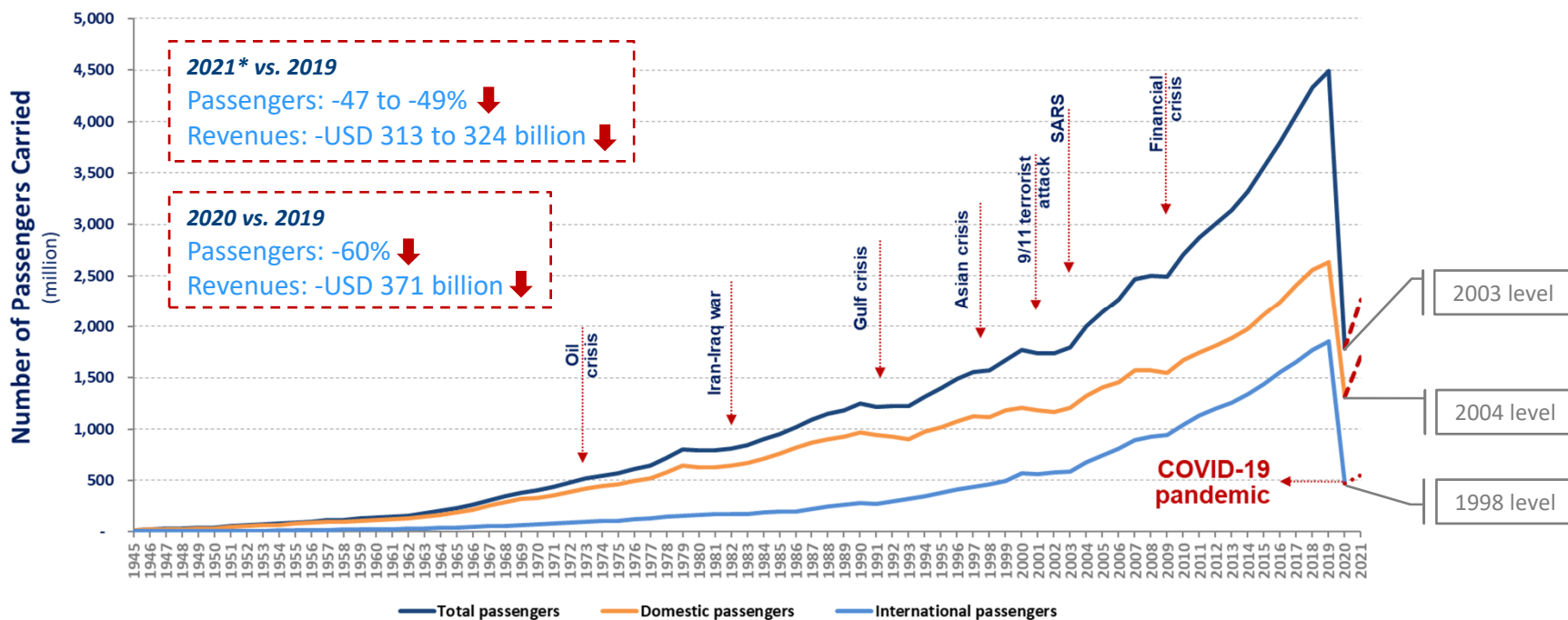
# Setting the Scene: Aviation Data Analysis for Strategic Decision Making during the COVID-19 Pandemic

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### World passenger traffic evolution 1945 – 2021\*



Source: ICAO Economic Impact Analysis of COVID-19 (<https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx>)



## Strategic information transmission: What makes information credible?

**My presentation is not on the data per se but on how airlines (or other players) can use and transmit information strategically to change outcome**

- By making “commitment” to specific actions, credible information can be conveyed to competitors, market and the public (**costly signaling**)
- If sending/receiving information is not costly, those information may be ignored by competitors, market and the public (**cheap talk, babbling**)
- Nevertheless, “cheap talk” can convey some information which may be considered credible to some degree



## Cheap talk: non-binding and inexpensive information transmission

- The information that airlines regularly disclose and **preannounce** ranges from schedules, fares and seat availability to financial indicators, future prospects and business strategies
- These Information is **not binding**, and so it does not necessarily match the actual results and achievements
- Airlines can change their plans and forecasts without incurring significant costs before making final decisions (**costless signaling**)

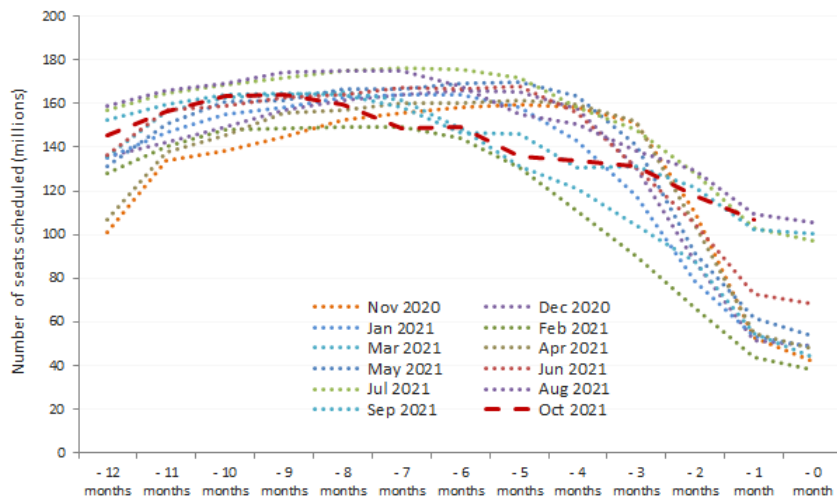
***Question: How can competitors, market and the public consider such information credible?***



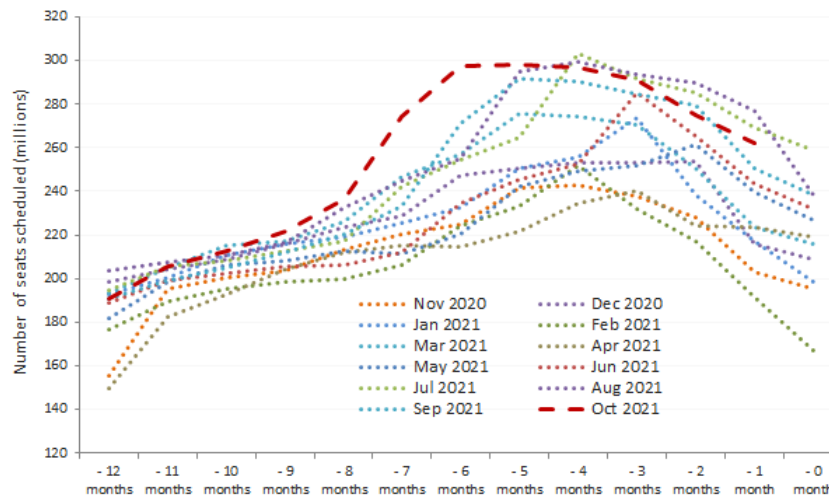
## Example 1: Pre-announcement of future schedules

Airlines announced/planned resumption of operations, however, over half of which were subsequently withdrawn

International schedules



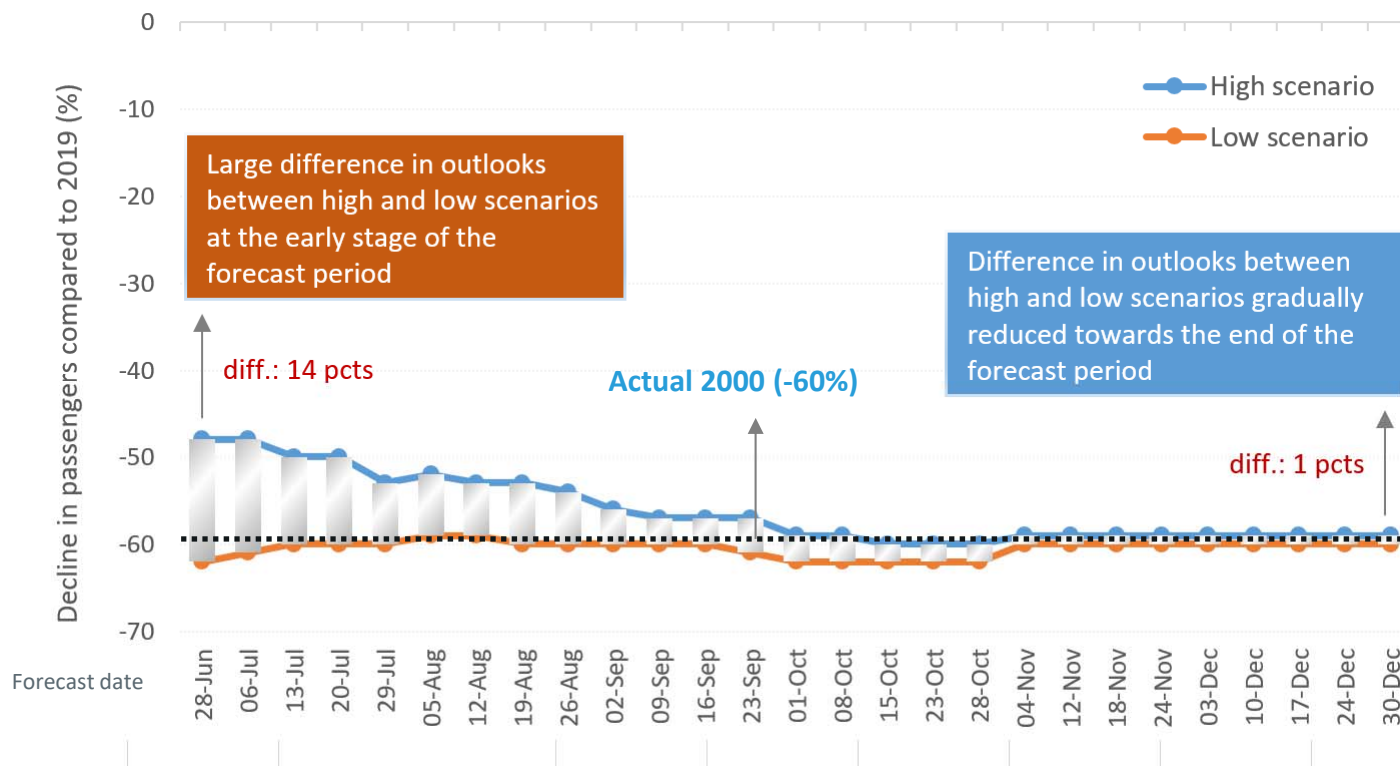
Domestic schedules





## Example 2: Short-term traffic outlook

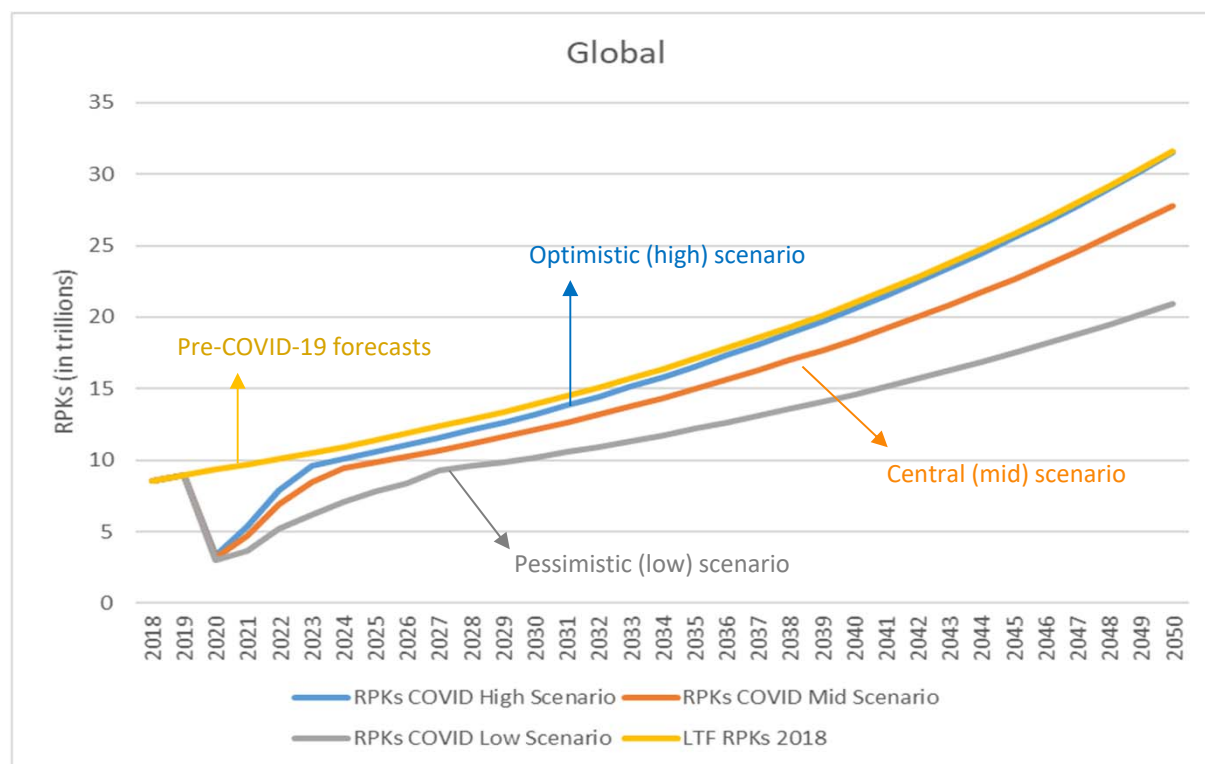
### Predicted Values of Passenger Numbers for Year 2000 (compared to 2019 level)





## Example 3: Long-term traffic forecasts

### ICAO global long-term passenger traffic forecasts have multiple scenarios



- High scenario: return to pre-crisis trend around 2030
- Mid and low scenarios: permanent shifts downwards
- 32-year CAGRs (2018-2050)
  - High: 4.2%
  - Mid: 3.6%
  - Low: 2.9%



## Constructive ambiguity: The less precise information is, the more credible it may be

“**Constructive ambiguity** is a term generally credited to Henry Kissinger, said to be the foremost exponent of the negotiating tactic it designates. It refers to the **deliberate use of ambiguous language** on a sensitive issue in order to advance some political purpose.” [Wikipedia]

“**Ambiguity** allows some discretion without necessarily a loss in **credibility** over time. Obviously, however, though an ambiguous rule may be more **credible** than a transparent rule ..., it is less well-specified and therefore will have less impact on market behavior than a credible transparent rule.” [IMF Working Paper, WP/97/138]\*





- Consider a duopoly market in which Airline X and Airline Y compete
- If Airline Y pre-announces its plan as an ambiguous “moving target”
  - Airline Y expects that Airline X’s reaction to this announcement would be weaker due to ambiguity of the information
  - Therefore, Airline Y does not have an incentive to influence Airline X’s decision-making by manipulating the information
  - Consequently, ambiguous information in Airline Y’s announcement could be credible
- If Airline Y pre-announces a clear precise plan
  - Airline Y expects that Airline X would react strongly to it, and thus has an incentive to manipulate the information to influence Airline X’s decision-making
  - However, Airline X would understand this, and therefore ignore or discount Airline Y’s precise information, no matter how accurate it is



## Possible theoretical accounts to the question on cheap talk

The literature on “**cheap talk**” indicates that **credible** information tends to become **imprecise**, i.e. **constructively ambiguous**\*

Therefore, airlines could transmit **credible** information to competitors, market and the public if and because:

- Example 1: schedule plan is a **moving target** incorporating information on demand uncertainty
- Examples 2 & 3: Outlook/forecasts are presented with **multiple scenarios** instead of one scenario

The sender communicates imprecise information that contains the truth. For example, instead of claiming that its target for the monthly frequency is exactly 100, it might make an announcement to the effect that it has a target somewhere in the 90 to 120 range. The receiver believes it and acts upon it.



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