

11th Montreal Industrial Problem Solving Workshop

Airline Codeshare correlative analysis

IATA Team Presentation

23-27 Aug, 2021

Meet the Team



Organizing Committee
Alexandre Nguyen



IVADO Advisor
Vanessa Alarie



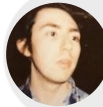
Professor
Fabian Bastin



Researcher
Khalil AHandawi



IATA representative
Hyuntae Jung



Alexandre
Achard de Lustrac



Benoît Corsini



Hans Obas



Junior Momo Ziaz



Patricia Talotsing



Qiad Wang



Yassin Zerrouk



Our Partner

International Air Transport Association (IATA)

Global trade association for the world's airlines

Founded in

1945

Representing

82%

of global traffic.



IATA's mission

*represent, lead and serve
the airline industry*

Context

Air transportation is a business with small profit margins.

Partnerships help to expand operations.

A common practice is codesharing: selling tickets of a partner operated flight.

IATA proposes a safety certification: IOSA.

Is there any link between safety certification and the ability to codeshare?

What is the impact on airline operations and the global air traffic?

IATA Operational Safety Audit (IOSA)

“ The Program IOSA is an internationally recognized and accepted evaluation system designed to assess the operational management and control systems of an airline.

It is the benchmark for global safety management in airlines. ”



IOSA Characteristics


All IATA members are registered and must remain registered in order to maintain IATA membership.

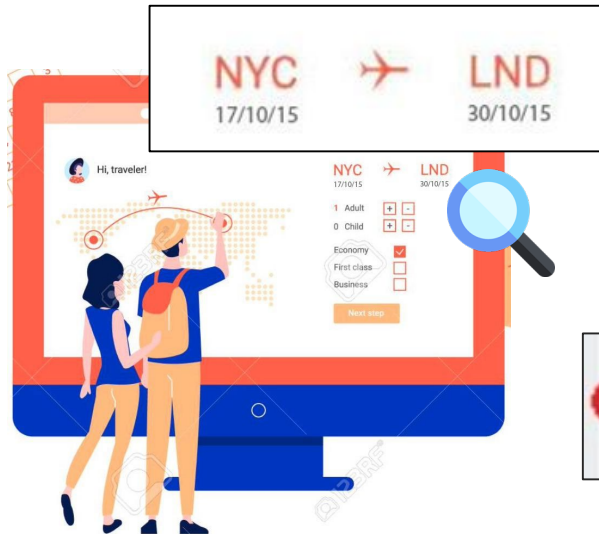
Required by some countries.

Not required for codesharing.
But could facilitate it?

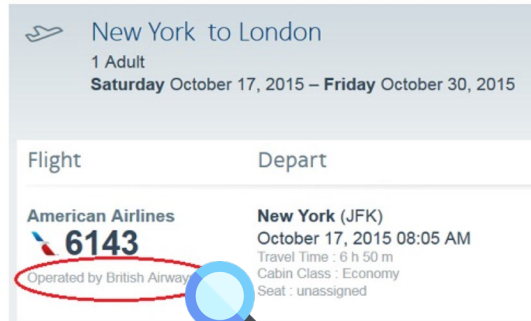
Codeshare

- Partnership between 2 or more airlines
- One flight segment may have multiple associated flight numbers

Marketing airline  American Airlines



Computerized reservations



Operated by British Airways

Operating airline

 BRITISH AIRWAYS



Why Airlines Codeshare?

Improve connectivity

Facilitate market access

No asset investment

Attract more traffic



Problem

Empirical observations suggest a link between code sharing and IOSA registration.

To this date there is no detailed statistical analysis

Our Aim is to provide a first insight.

Objectives

1-

Investigate IOSA registration correlation with codesharing

2-

Understand better the drivers of IOSA registration

3-

Identify any potential correlation with other metrics in the data

Data provided



IOSA Registry
760 airlines



Flight Schedule Data

- Operating +12 millions flights
- Codeshare +21 million flights

Passenger Data

- +236 million flights



List of global Airports

List of global Airlines

Our Approach



Step 1
Data Sampling

Step 2
Descriptive Statistics
and Visualisation

Step 3
Advanced Analysis

Step 4
Future Steps

Our results

From our **preliminary results**,
we observe that

01

There might exist a relation between
IOSA and **codeshare**.

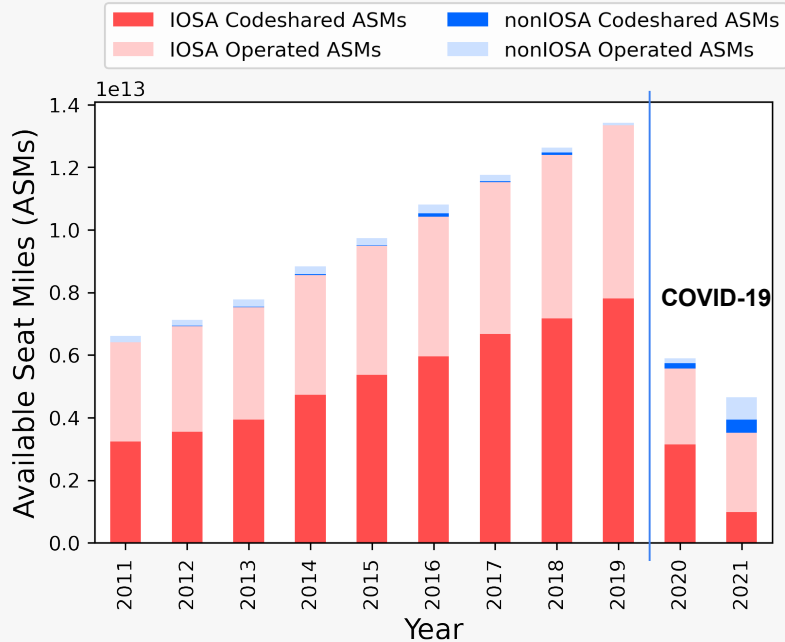
02

Both can lead to **activity expansion**.

03

We observed an increase in
commercial awareness towards
IOSA certification.

Proof Of Concept



Proportion of IOSA and non IOSA flights

Worldwide Trends In Codesharing and IOSA Certifications

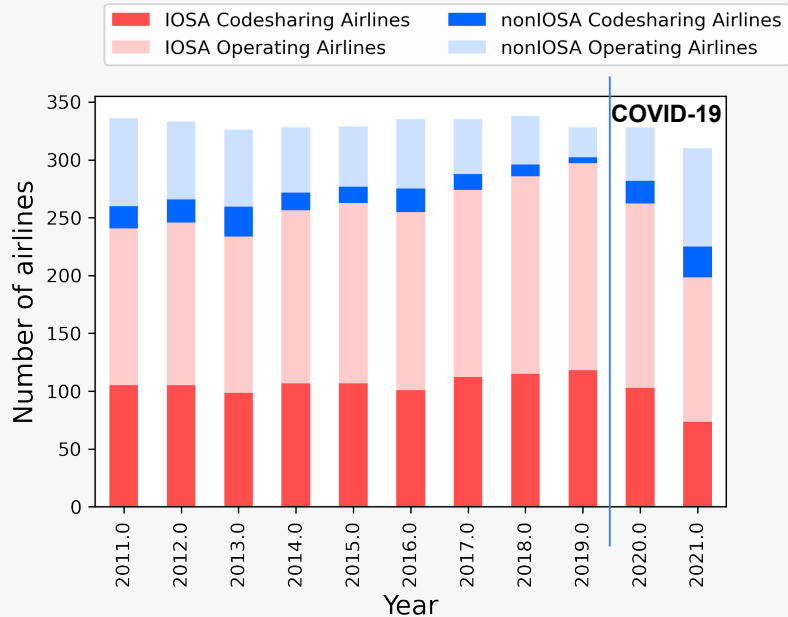
- Increase in supply of Air Travel
- Most flights operate under IOSA certification

Proportion of flights

	Non IOSA flights	IOSA flights
Operated flights	3.6 %	45.8 %
Code shared flights	0.9 %	49.6 %
Total	4.6 %	95.4 %

*ASMs= Seats x Frequency x mileage

Proof Of Concept



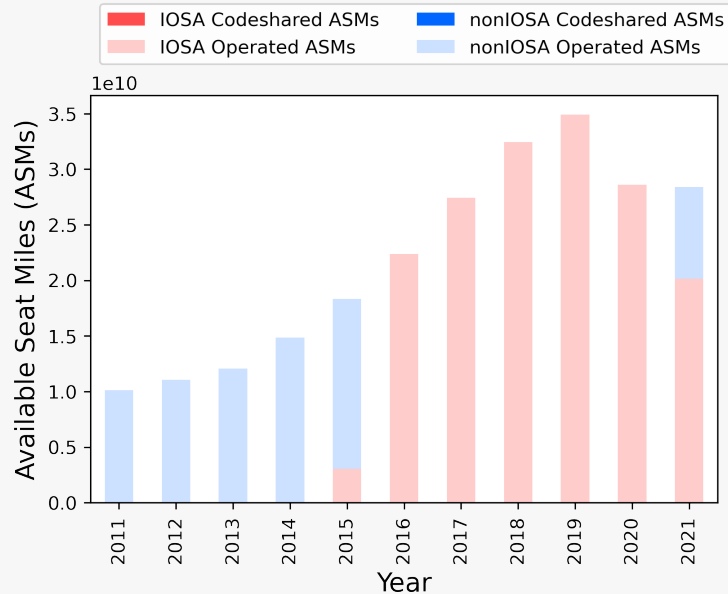
Worldwide Trends In Codesharing and IOSA Certifications

- Proportion of IOSA certified airlines has been growing steadily up until COVID-19

Proportion of Airlines

Non IOSA Airlines	IOSA Airlines
41.0 %	59.0 %

Proof Of Concept

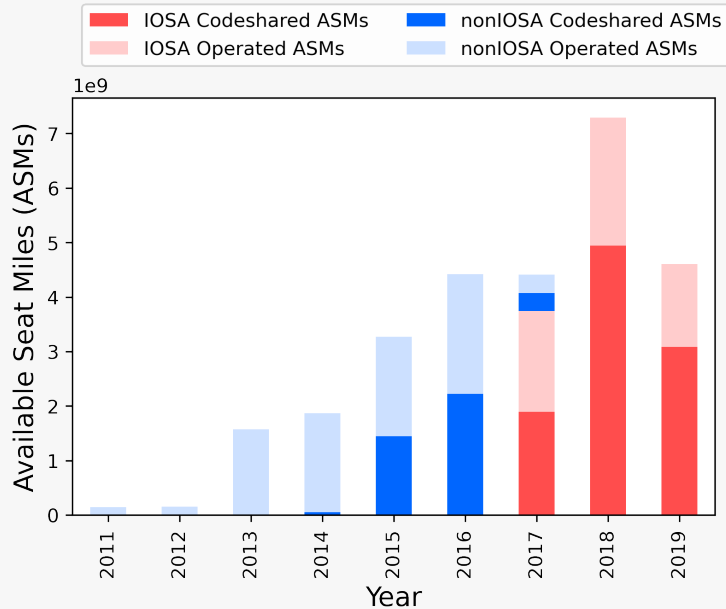


Worldwide Trends In Codesharing and IOSA Certifications.

- Let's take a closer look at a specific European airline that relies on directly operated flights
- IOSA certification does not affect rate of growth of directly operated flights

*ASMs= Seats x Frequency x mileage

Proof Of Concept



Worldwide Trends In Codesharing and IOSA Certifications.

- Let's take a closer look at another European carrier that relies on codesharing
- There is a surge in supply following IOSA certification in 2018
- This surge can be attributed to **codeshared** flights

*ASMs= Seats x Frequency x mileage

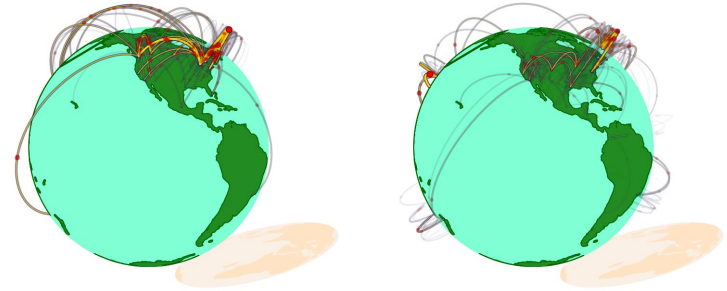
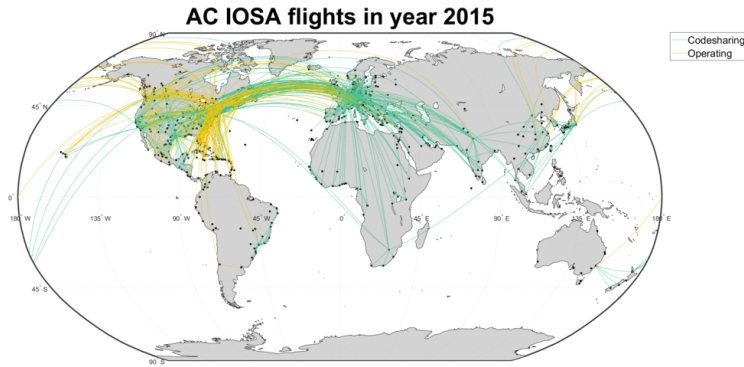
Visualization

We developed two representations of the world flights.

These two representations complement each other.

Our Aim is to provide a meaningful representation of the data.

Two types of visualization



Air Canada Operated Flights

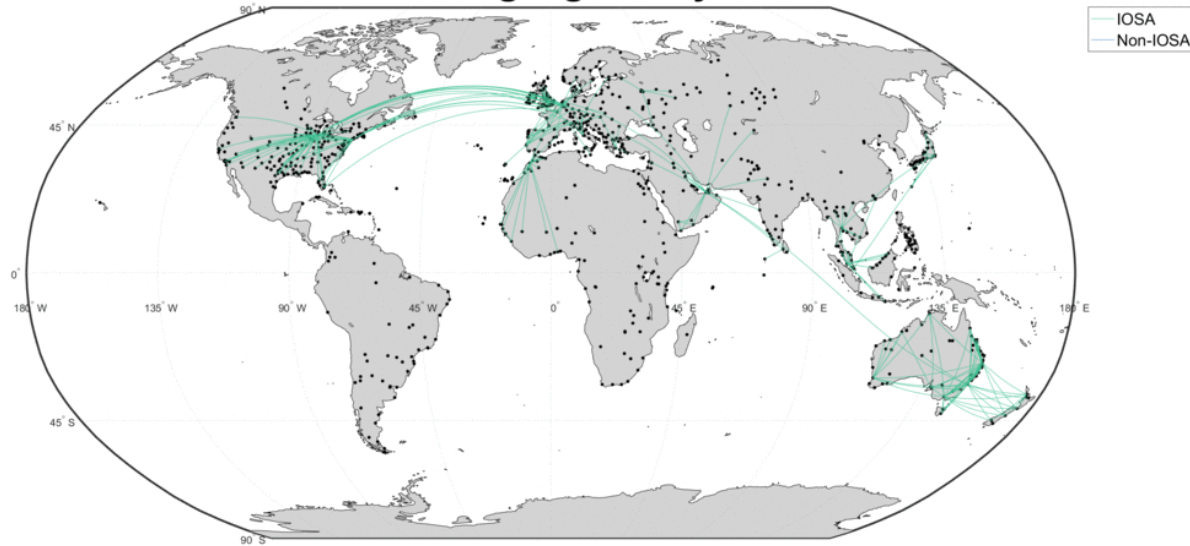
Air Canada Codeshared Flights

Temporal evolution on a map

Comparison between two globes

Temporal Analysis

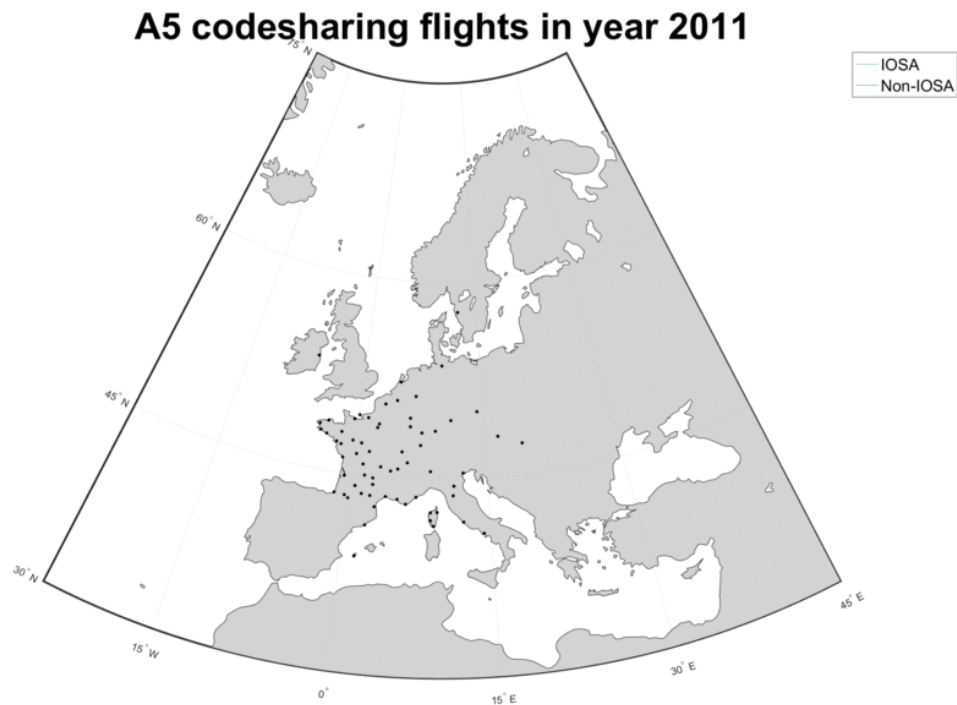
EY codesharing flights in year 2011



Useful in observing the evolution of the fleet.

For example here with Etihad.

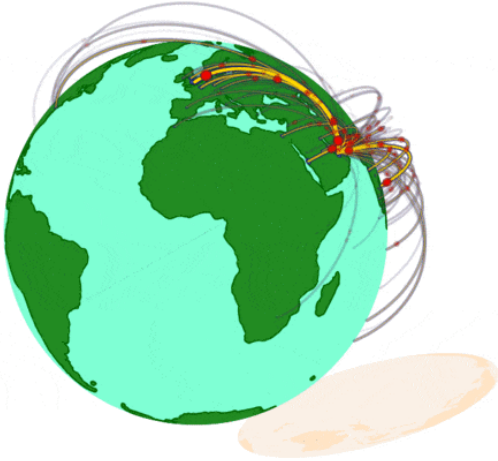
Temporal Analysis



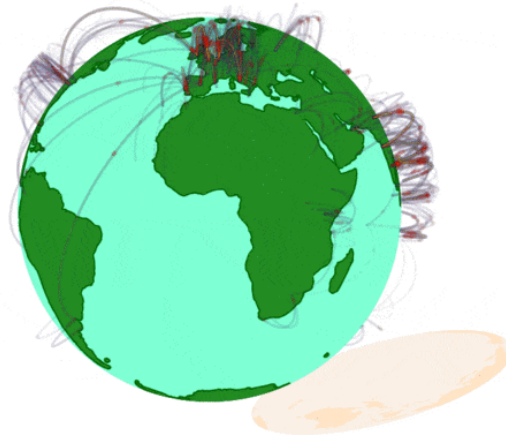
Useful to analyze the effect of IOSA.

For example here with HOP.

Comparisons



Etihad Operated Flights

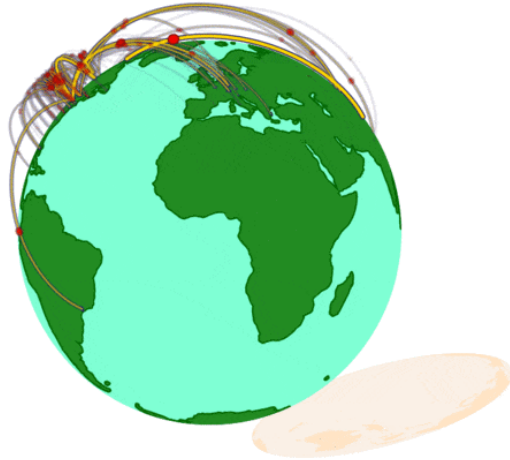


Etihad Codeshared Flights

Useful to see the difference between two types of flights.

For example here with Etihad.

Comparisons



Air Canada Operated Flights - 2019



Air Canada Operated Flights - 2020

Useful to see the evolution between two years.

For example here with Air Canada.

Achievements

The team managed to interpret the large amount of data and produce interesting insights.

The data team developed an efficient sampling strategy to support the study.

The visualization team was able to plot flights and ASMs in 2D and 3D.

The stat team highlighted relations and evolutions of IOSA and codeshares.

Next steps

The amount of data and possible statistical links is limitless, and to apprehend it all might take months, or even years.

Preliminary results suggest that IOSA certification impacts the number of flights that the airlines could operate.

Extend our analysis
to
more airlines &
disaggregated data.

Consider
other metrics

Have more
complex
**analytical
tools.**

Thank You!

From the IATA team

