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**ICAO Strategic Objective:**  
*Economic Development of Air Transport*

# **Electronic Tools for Dissemination of Air Transport Data**

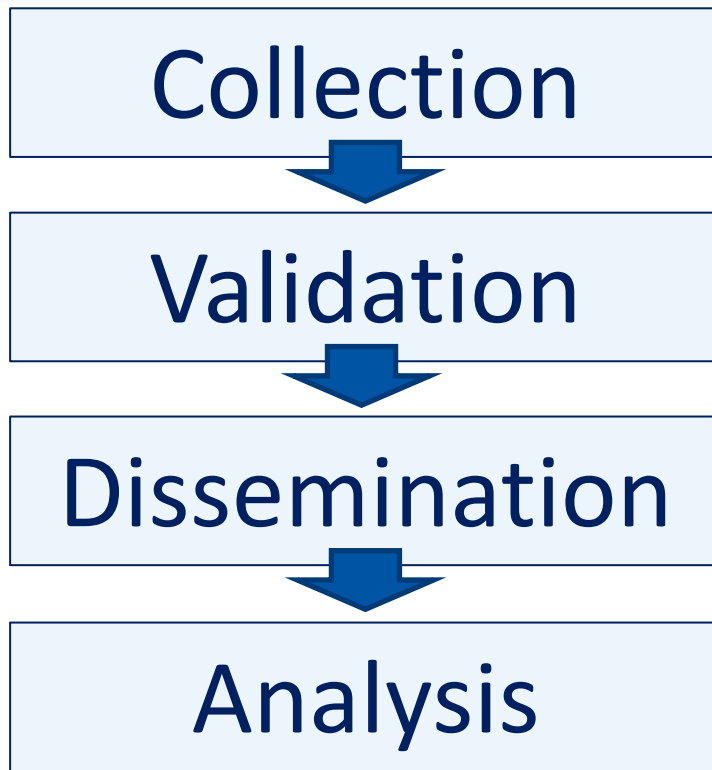
Jérôme SIMON

*Infrastructure Manager*

Economic Policy and Analysis (EAP) Section, ICAO



# Data: from Collection to Analysis





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# Sources of Data

*For each State:*

## Air carrier

**Traffic** — Forms A, A-S, B and C

**Fleet and personnel** — Form D

**Finance** — Form E-F

**Fuel consumption** — Form M

**Different data sources  
for different purposes**

Each has different  
coverage, level of detail,  
limitations on use, and  
produced on their own cycle

## ANSP

**Traffic** — Form L

**Finance** — Form K

## Airport

**Traffic** — Forms I and I-S

**Finance** — Form J

## State

**All forms +**

**Civil aircraft registered** — Form H

**Aviation personnel** — Form N



## Other data providers

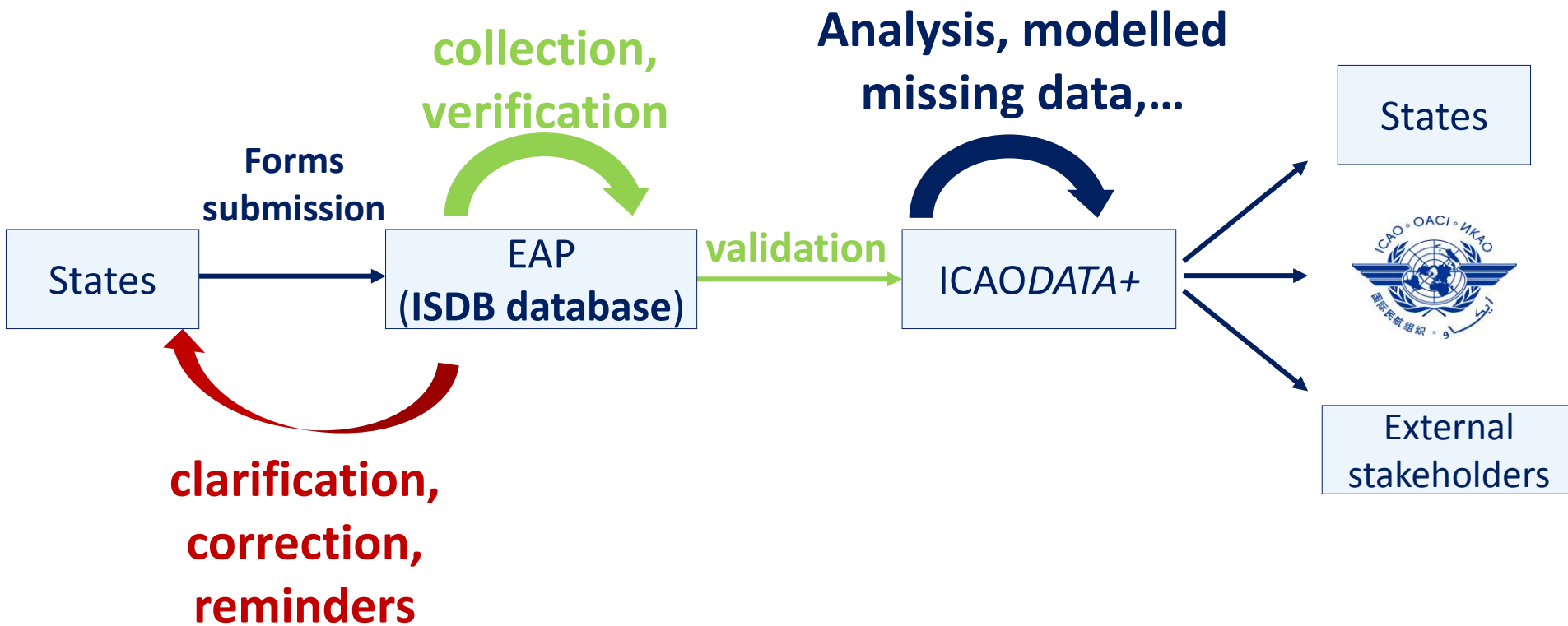
Traffic, Fleet, Financial data  
etc. ...



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# Statistics collection and dissemination



# Heterogeneous data

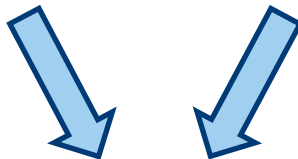
## ICAO

### Statistical Forms

*Data **normalized** through  
the ISDB process*

## Other data providers

*Traffic  
Fleet  
Financial data  
etc. ...*



## Reference tables:

To be able to cross- analyze the data

*Example:*

**Form A (Airline traffic)  
& OAG**

## Verification process

*Before disseminating the data (ICAODATA+, report of the Council, on-demand analysis, etc. ...)*

→ **Analysis and validation of the received data**



## Recurrent analysis

*Analysis that are made regularly*

→ **Automation of the analysis tools**

## Ad-hoc analysis

*On-demand analysis*

→ **Using existing tools or creation of new tools**



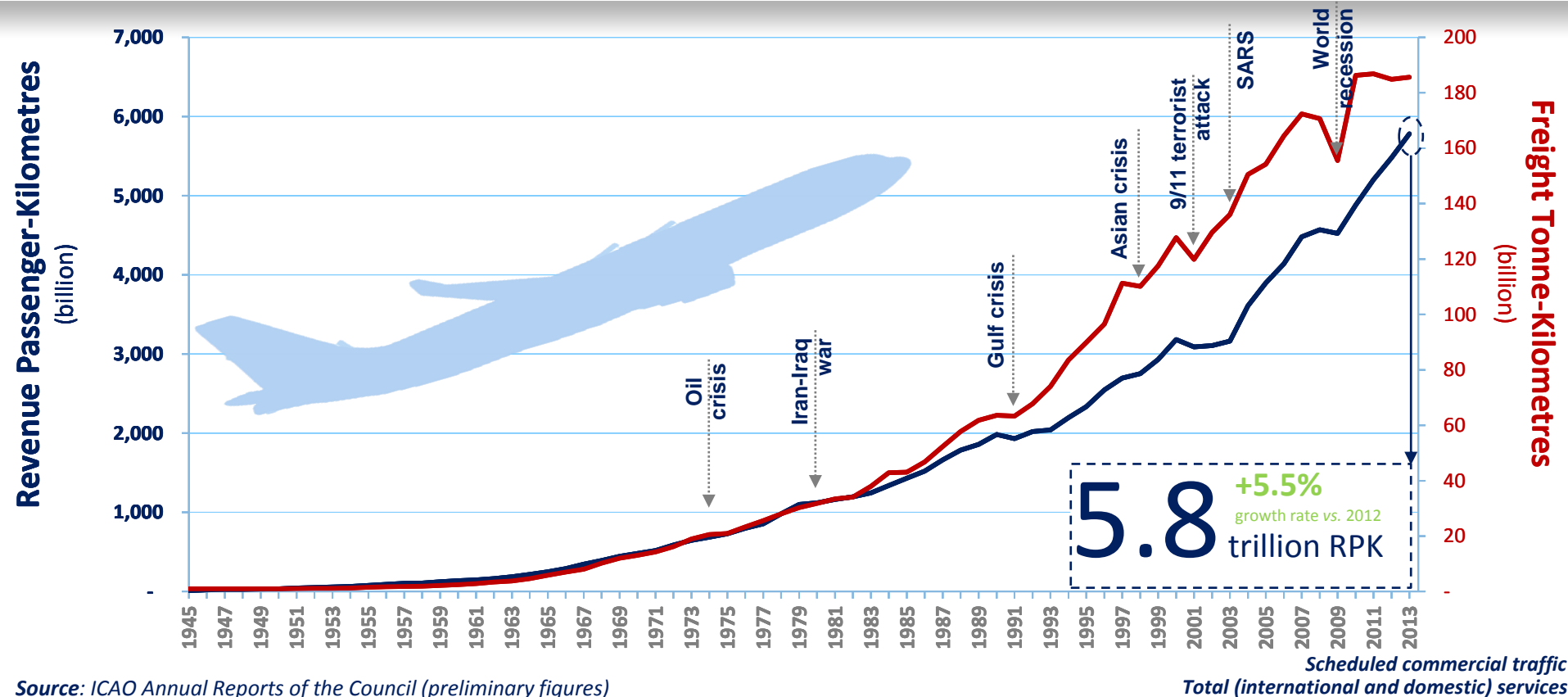
# *Some examples Analysis*



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# Air Transport Development



Source: ICAO Annual Reports of the Council (preliminary figures)









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# ICAO Website: Facts & Figures

## Analyze the air transport market

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**  
A United Nations Specialized Agency

Franglais |   

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ICAO > Sustainability > Facts & Figures

**Facts & Figures**

**The World of Civil Aviation: Facts & Figures**

3.1 billion

Passengers carried in 2013\*

→

6.4 billion

Forecasted passengers carried in 2030

+4.5%  
growth rate vs. 2012

+4.4%  
compound annual growth rate

32 million

Aircraft departures in 2013\*

→

59 million

Forecasted aircraft departures in 2030

+1.2%  
growth rate vs. 2012

+3.6%  
compound annual growth rate

**Key figures**

\*Preliminary figures

[Click here to view](#)

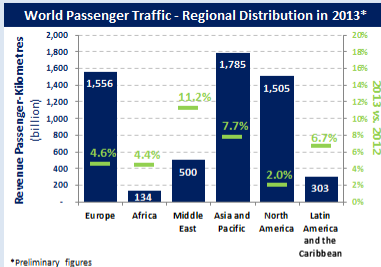
## Analysis

5.8 trillion  
Revenue Passenger-Kilometres in 2013\*

World passenger traffic expressed in terms of Revenue Passenger-Kilometres (RPK) on total scheduled services (i.e. international and domestic services combined) increased by 5.5 per cent in 2013 compared to 2012, according to the data provided to the International Civil Aviation Organization by its Member States and ICAO estimates.

This represents the fourth consecutive positive growth for the air transport industry since 2009 and corresponds to an increase of 4.5 per cent over 2012 in the number of passengers carried, reaching 3.1 billion passengers in 2013.

186 billion  
Freight Tonne-Kilometres in 2013\*



The number of aircraft departures reached the record level of 32 million in 2013, an increase of 1.2 per cent compared to 2012.

By 2030, a compound annual growth rate of 4.6 per cent for world scheduled passenger traffic will result in more than twice of RPK of the 2013 level, according to ICAO forecasts.



In 2013, the world air cargo market increased by 0.4 per cent in terms of Freight Tonne-Kilometres performed. This represents the third consecutive year of growth below 0.5 per cent. World scheduled freight traffic is forecasted to grow at an average annual rate of 5.3 per cent over the next twenty years.



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# ICAO Website: Monthly Monitor

The ICAO  
Monthly  
Monitor is  
available  
online



## ECONOMIC DEVELOPMENT

### AUG 2014: Air Transport Monthly Monitor

World Results and Analyses for JUN 2014. Total scheduled services (domestic and international).

<http://www.icao.int/sustainability/Pages/T-1-MonthlyMonitor.aspx>

Economic Analysis and Policy Section  
Email: [esp@icao.int](mailto:esp@icao.int)

#### GLOBAL KEY FIGURES

**JUN 2014**  
(annual ATR 2013)

RPK ▲+4.7% ASK ▲+5.1% FTK ▲+2.3% LF: 81.5% ▲+0.2 pts

#### OUTLOOK\* - JUL 2014

ASK ▲+6.4% \*Source OAG

#### PASSENGER TRAFFIC

##### Revenue Passenger-Kilometres - RPK

World passenger traffic grew by +4.7% in June 2014 compared to June 2013. This growth is slightly lower than the growth recorded in May 2014 (+4.2%). Supported by the economic improvement in emerging markets and recovery of advanced economies, the growth of world passenger traffic is expected to continue in the following months.

(Source: ICAO, IATA, OAG)

#### CAPACITY

##### Available Seat-Kilometres - ASK

Capacity worldwide increased by +5.1% in June 2014 year-on-year, representing -0.2 percentage points lower than the May capacity growth (+5.3%). The expansion of capacity is expected to accelerate in July 2014, with an estimated growth rate of -6.4% year-on-year.

(Source: ICAO, IATA, OAG)

#### International Traffic

International passenger markets grew by +5.5% in June 2014 compared to last year, which is 1.5 percentage points lower than the strong year-on-year growth registered in May 2014 (+7.0%). International tourist arrivals are expected to follow a similar monthly growth trend.

(Source: IATA, UNWTO)

#### Load Factor - LF

The passenger Load Factor reached 81.5% in June 2014. This is similar to the 81.7% recorded in June 2013. LF improved +2.7 percentage points compared to the 79.0% in May 2014. The year-to-date LF for the first six months of 2014 was 79.3%.

(Source: IATA)

#### FREIGHT TRAFFIC

##### Freight Tonne-Kilometres - FTK

World freight traffic grew by +2.3% in June 2014 compared to the same period of last year, which is slightly lower than the +4.7% growth in May 2014. Freight Tonne-Kilometres grew at a slower pace than the freight capacity growth (+2.6%) in June 2014.

The growth of world freight traffic is expected to remain positive for the following months. World trade volume has been improving since the 2nd quarter of 2014, and economies in the developed countries are recovering steadily, which should support the world air freight traffic growth.

(Source: IATA)

ACR: Airports Council International; ASK: Available Seat-Kilometres; IATA: International Air Transport Association; FTK: Freight Tonne-Kilometres; LF: Passenger Load Factor; OAG: Official Airline Guide; RPK: Revenue Passenger-Kilometres; UNWTO: World Tourism Organization; YTD: Year-to-date; YTD: Year-to-date.

## ECONOMIC DEVELOPMENT

### AUG 2014: Air Transport Monthly Monitor

Results and Analyses for JUN 2014

Continued from page 1

#### TOP 15 AIRPORTS (Ranked by aircraft movements, passengers and volume of freight)

**JUN 2014: +0.5%, +2.7%, and +3.5% YoY in terms of aircraft movements, passengers and freight for the Top 15**

Aircraft Movements			Passengers			Freight		
Ranking by number of movements	Airports	YoY	Ranking by volume of passengers	Airports	YoY	Ranking by volume of freight	Airports	YoY
1	Chicago IL, US (MDW)	1.3%	1	Hong Kong, HK (HKG)	3.8%	1	Hong Kong, HK (HKG)	7.3%
2	Atlanta GA, US (ATL)	5.0%	2	Los Angeles CA, US (LAX)	1.1%	2	Los Angeles CA, US (LAX)	3.8%
3	Dallas/Fort Worth TX, US (DFW)	0.4%	3	Shanghai CN (PVG)	1.0%	3	Shanghai CN (PVG)	6.5%
4	Los Angeles CA, US (LAX)	1.8%	4	Amsterdam NL (AMS)	0.7%	4	Amsterdam NL (AMS)	0.4%
5	Denver CO, US (DEN)	-1.3%	5	Incheon KR (ICN)	5.2%	5	Incheon KR (ICN)	1.8%
6	Beijing, CN (PEK)	1.7%	6	Dubai AE (DXB)	6.1%	6	Dubai AE (DXB)	6.4%
7	Charlotte NC, US (CLT)	-2.2%	7	Tokyo JP (NRT)	6.1%	7	Tokyo JP (NRT)	7.3%
8	Las Vegas NV, US (LAS)	0.4%	8	Frankfurt DE (FRA)	5.8%	8	Frankfurt DE (FRA)	-0.4%
9	Houston TX, US (IAH)	0.5%	9	London GB (LHR)	5.4%	9	London GB (LHR)	-4.3%
10	Frankfurt, DE (FRA)	0.4%	10	Hong Kong, HK (HKG)	4.0%	10	Hong Kong, HK (HKG)	-0.2%
11	Paris, FR (CDG)	3.8%	11	Jakarta ID (CGK)	16.9%	11	Singapore SG (SIN)	-0.3%
12	London, GB (LHR)	0.0%	12	Dubai AE (DXB)	8.5%	12	Miami FL, US (MIA)	1.1%
13	Amsterdam, NL (AMS)	2.4%	13	Los Angeles CA, US (LAX)	5.0%	13	Los Angeles CA, US (LAX)	3.8%
14	New York NY, US (LGA)	9.0%	14	Bangkok, TH (BKK)	9.5%	14	Bangkok, TH (BKK)	-1.1%
15	Islandia, IS (KEF)	9.4%	15	New York NY, US (JFK)	5.2%	15	Taipei, TW (TPE)	1.8%

Note: Total scheduled and non-scheduled services

In terms of aircraft movements, the Top 15 airports reported a growth of +0.5% year-on-year. Chicago ranked first with an increase of +1.3%, Istanbul recorded the highest year-on-year growth within the Top 15 by +9.8%, followed by New York (+9.0%), while Atlanta posted the largest decrease of -0.4%.

In terms of passengers, the Top 15 airports reported a growth of +2.7% year-on-year. All airports in the Top 15, except for Dubai and Jakarta, posted a year-on-year growth. Atlanta ranked first with +1.8% increase over June 2013. Istanbul recorded the highest growth of the Top 15 by +9.5%, followed by Los Angeles (+6.7%).

In terms of freight, the Top 15 airports reported a growth of +0.5% year-on-year. Hong Kong recorded the highest growth of the Top 15 by +7.3% and ranked first. Shanghai grew strongly by +6.5% and ranked 2nd. Dubai posted the largest decrease of -1.4%, followed by Beijing (-0.1%).

#### TOP 15 AIRLINES (Ranked by RPK)

**JUN 2014: +3.6% YoY in terms of RPK for the Top 15**

In terms of RPK, the Top 15 airlines grew by +3.6% in June 2014, compared to last year. This growth is +1.1 percentage points lower than the world average on scheduled services. All airlines in the Top 15, except for Singapore Airlines, posted a positive growth in RPK. American Airlines remained first with a growth of +0.8% over June 2013. Delta (+3.8%) and United (+0.2%) ranked second and third, respectively.

For the sixth consecutive month, Turkish Airlines recorded the highest year-on-year growth rate of RPK in the Top 15 (+17.1%). Emirates posted the second highest growth of +9.2%. Cathay Pacific reported the third largest growth of +8.2%.

The three Chinese carriers in the Top 15 recorded a year-on-year growth in RPK. Air China grew by +7.5%, followed by China Southern (+3.5%), and China Eastern (+2.0%).

For the European carriers, British Airways grew by +4.7% year-on-year in RPK, followed by AF-KLM (+2.9%) and Lufthansa (+2.2%). LATAM, the only carrier from Latin America and the Caribbean region ranked in the Top 15, grew by +1.1%.

#### CAPACITY BY REGION (ICAO Statistical Regions)

**JUN 2014**

All regions showed positive growth in capacity in June 2014 compared to last year, with a +5.0% increase in capacity worldwide.

Asia and the Pacific, the largest region with one third of the worldwide capacity, recorded the highest capacity increase of +6.5% year-on-year. Airlines in the Middle East have slowed down the capacity expansion since May 2014, and posted a year-on-year growth of -5.8%. Africa posted the slowest growth of +1.4%.

The worldwide result of June 2014 (+5.0%) is slightly lower than the YTD 2014 result (+5.6%). All regions, except for North America, posted a lower growth in June than their respective year-to-date growth. The Middle East recorded the most significant difference of -4.5 percentage points.

Region	ASK (billion)	% YoY	ASK (billion)	% YTD
Asia and the Pacific	198	30%	6.5%	1.9%
Europe	188	20%	5.5%	9.2%
North America	166	25%	3.4%	9.1%
Middle East	57	9%	-5.8%	34%
Latin America and the Caribbean	81	1%	1.1%	19%
Africa	17	3%	1.4%	9%
World	657	100%	5.0%	17%

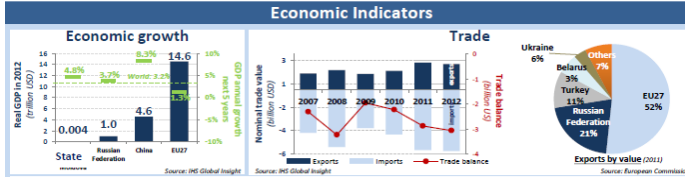
(Source: ICAO, IATA, OAG)

\* Embarked and Disembarked Passengers \*\* Loaded and Unloaded Freight in Tonnes \*\*\* Includes Transit Freight

ACR: Airports Council International; ASK: Available Seat-Kilometres; IATA: International Air Transport Association; FTK: Freight Tonne-Kilometres; LF: Passenger Load Factor; OAG: Official Airline Guide; RPK: Revenue Passenger-Kilometres; UNWTO: World Tourism Organization; YTD: Year-to-date; YTD: Year-to-date.

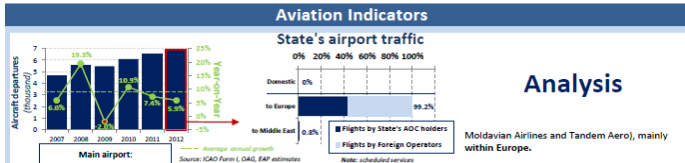
# Economic and Air Transport Indicators

## State - ATB Brief - Air Transport Indicators



### Analysis

→ Snapshots and analyses of **economic indicators** at a State level



### Analysis

→ Snapshots and analyses of **air transport indicators** at a State level



### Analysis

→ Reporting status at the State level

### Reporting status

Hidden

### Air Transport Regulation

### Analysis

→ **Air transport regulation** matters and development



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# Long-Term Air Traffic Forecasts: “GATO”

- **Past decade air transport trends**
- **Demand drivers analysis**
  - *Economic growth*
  - *Liberalization*
  - *Low Cost Carriers*
  - *Improving technologies*
- **Challenges for air traffic development**
  - *Fuel prices*
  - *Airport/ANSPs capacity constraints*
  - *Competition and inter-modality*
- **Forecasts**
  - *Structure and methodology*
  - *Passenger and cargo*
  - *Results and analysis by route group*

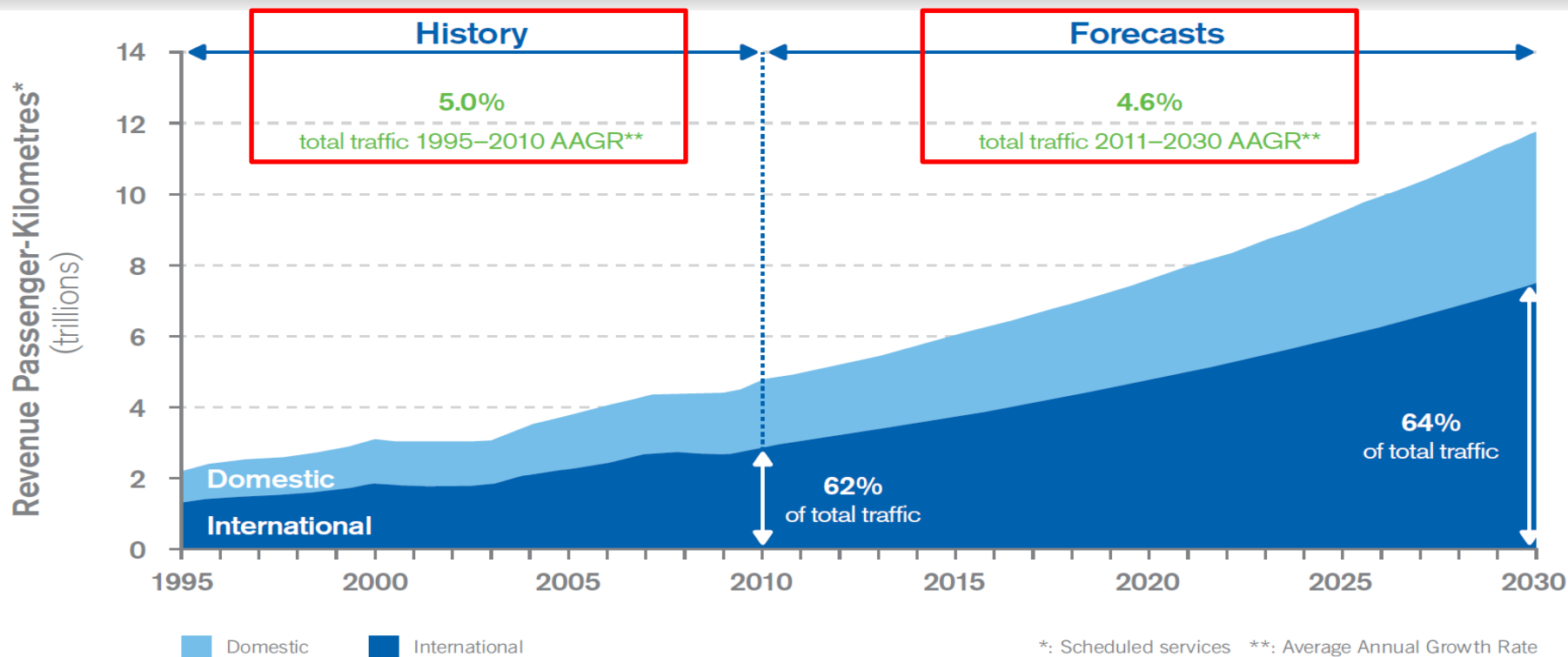




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# Passenger Traffic Forecasts for the Horizon 2030



Source: Cir 333, *Global Air Transport Outlook to 2030 - GATO*



# *Some examples of Tools*



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**ICAODATA+**

# Disseminate reliable and independent data

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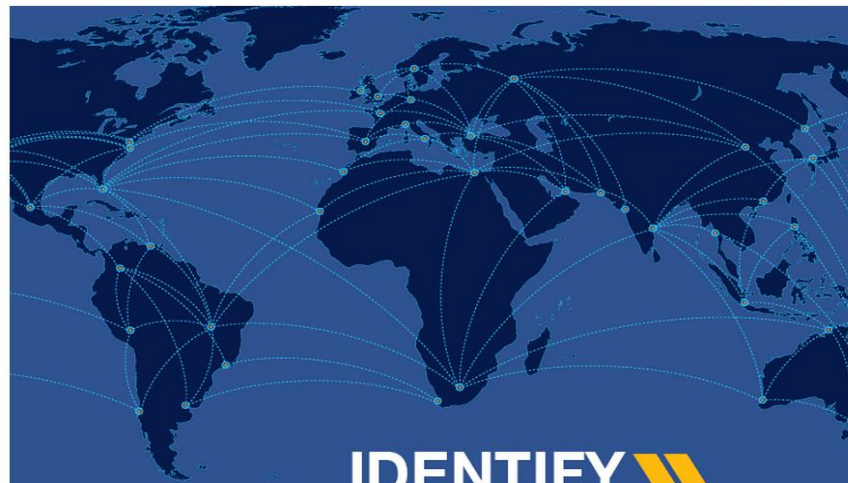
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**IDENTIFY**  
new opportunities

[stats.icao.int](https://stats.icao.int)





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# ICAODATA+

## 6 modules are available



# ICAODATA+



**AIR CARRIER TRAFFIC**



**TRAFFIC BY  
FLIGHT STAGE**

**AIR CARRIER  
FINANCES**

**AIRPORT TRAFFIC**

**ON-FLIGHT ORIGIN  
AND DESTINATION**

**AIR CARRIER FLEET  
AND PERSONNEL**





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# ICAODATA+ : Analysis Tools

## Analyze the air transport markets

AIR CARRIER  
TRAFFIC

\* Annual or quarterly data reports have been reallocated on a monthly basis

Reset

Total traffic

Calendar				
2013	O1	Jan	Feb	Mar
2012	O2	Apr	May	Jun
2011	O3	Jul	Aug	Sep
2010	O4	Oct	Nov	Dec

Flight		
International	Scheduled	All Services
Domestic	Non-scheduled	All Freight
	Non-revenue	

State	
GERMANY	
AFGHANISTAN	
ALBANIA	
ALGERIA	
ANGOLA	

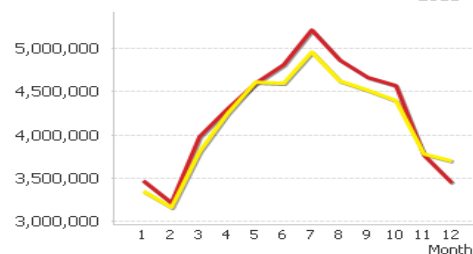
Territory	
<NONE>	
ANTIGUA & BARBUDA (UNITED KIN...	
ARUBA (NETHERLANDS)	
BERMUDA (UNITED KINGDOM)	
CAYMAN ISLANDS (UNITED KINGDO...	
FRENCH POLYNESIA (FRANCE)	
GREENLAND (DENMARK)	

Air carrier	
LUFTHANSA	
CONDOR	
GERMANWINGS	
A.L.T.A.	
AB AIRLINES	
ABAETE	
ABAVIA	
ABERDEEN AIRWAYS	
ABS JETS	
ABSA	

### Passengers

#### Passengers carried

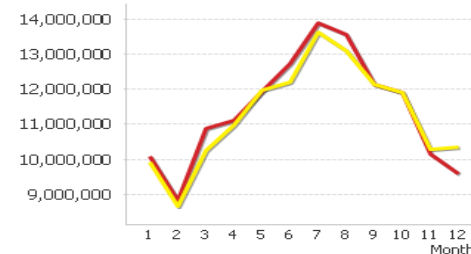
2012 vs 2011



### Payload

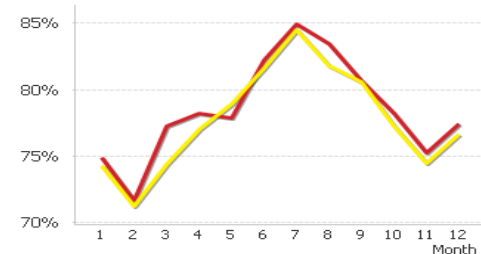
#### Passenger-km performed (000)

2012 vs 2011



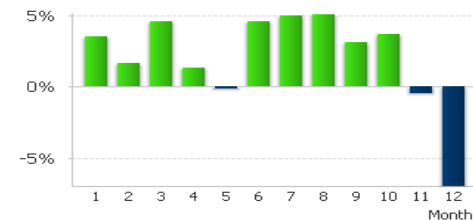
#### Passenger load factor

2012 vs 2011



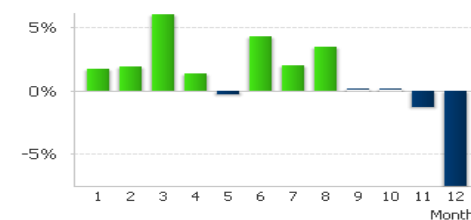
#### Passengers carried

2012 vs 2011 (variation)



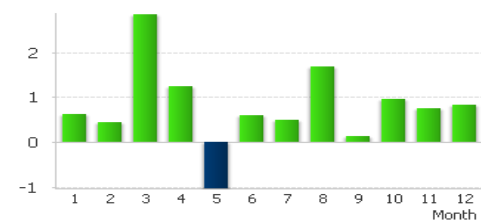
#### Passenger-km performed

2012 vs 2011 (variation)



#### Passenger load factor

2012 vs 2011 (difference)





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# Internal Analysis Tools



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## Air Transport Reporting Form A

### Carrier Selection

AIR_CARRIER_SHORT_NAME	YEAR_R	STATE_SHORT_NAME
DANA AIR	2002	ALGERIA
DARWIN AIRLINE	2003	ANGOLA
DELTA	2004	ARGENTINA
DHL AIR	2005	ARMENIA
DHL INTERNATIONAL	2006	AUSTRALIA
DIRECT AERO SERVICES	2007	AUSTRIA
DNIERPROAVIA	2008	AZERBAIJAN
DOMBASSAERO	2009	BAHRAIN
DONGHAI AIR	2010	BANGLADESH
DOT LT	2011	BELARUS

Execute Macro

Refresh ISDB  
Data Table

### Carrier Services

All services	Scheduled	in 2010		sheet #
		domestic	international	
All freight	Non-scheduled	domestic	international	1
		domestic	international	2
		domestic	international	3
		domestic	international	4
		domestic	international	5
		domestic	international	6
		domestic	international	7
		domestic	international	8

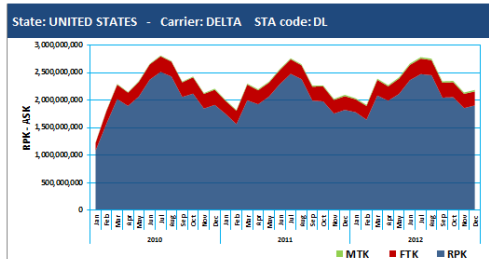
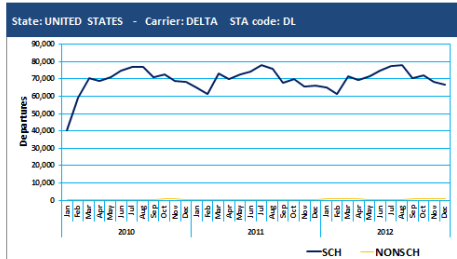
### Carrier Reporting Status

	2010	2011	2012
Number of reported months	12	12	12
Number of permanent forms	12	12	12
Number of temporary forms	0	0	0

### Main Trends

(international and domestic services combined)

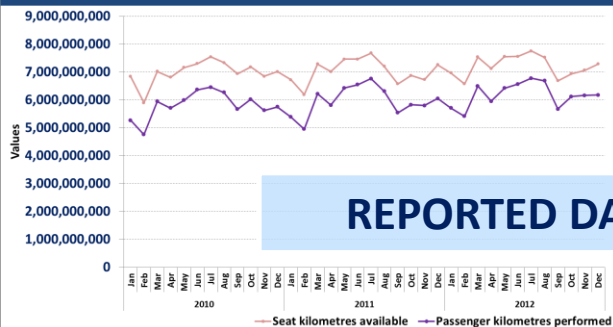
Departure	2011 vs. 2010	2012 vs. 2011
Scheduled	2.6%	0.9%
Non-Scheduled	-28.4%	112.5%



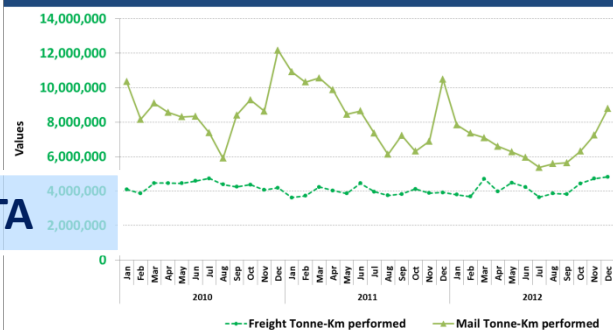
Dashboard  
linked to Oracle database

*Enable to manage forms and get  
quick information*

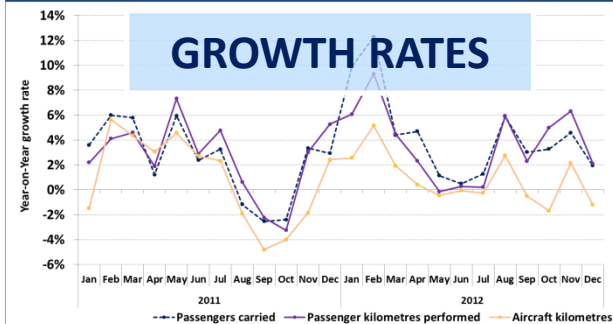
Form A / Airline ABC / DOMESTIC SCHEDULED ALL SERVICES



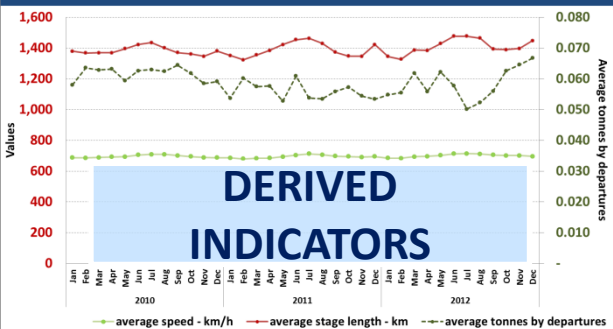
Form A / Airline ABC / DOMESTIC SCHEDULED ALL SERVICES



Form A / Airline ABC / DOMESTIC SCHEDULED ALL SERVICES / Year-on-Year growth



Form A / Airline ABC / DOMESTIC SCHEDULED ALL SERVICES

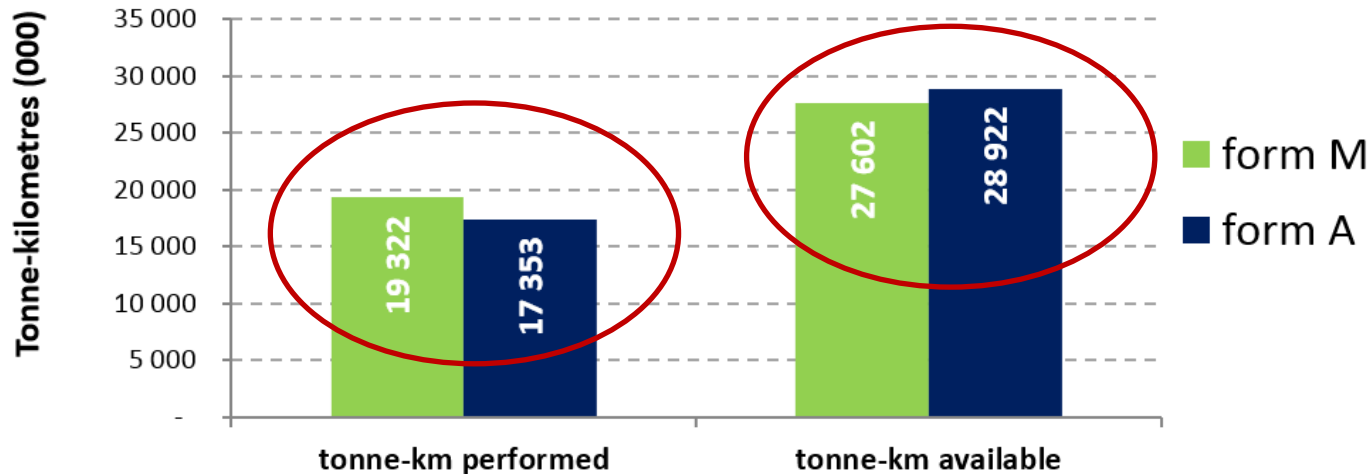


- **Validation:** Cross-check against historical data
- Analysis of trends and seasonality
- Detection of missing data

## Cross form validation

### Airline ABC - form A and form M consistency - 2012

total scheduled and non-scheduled services

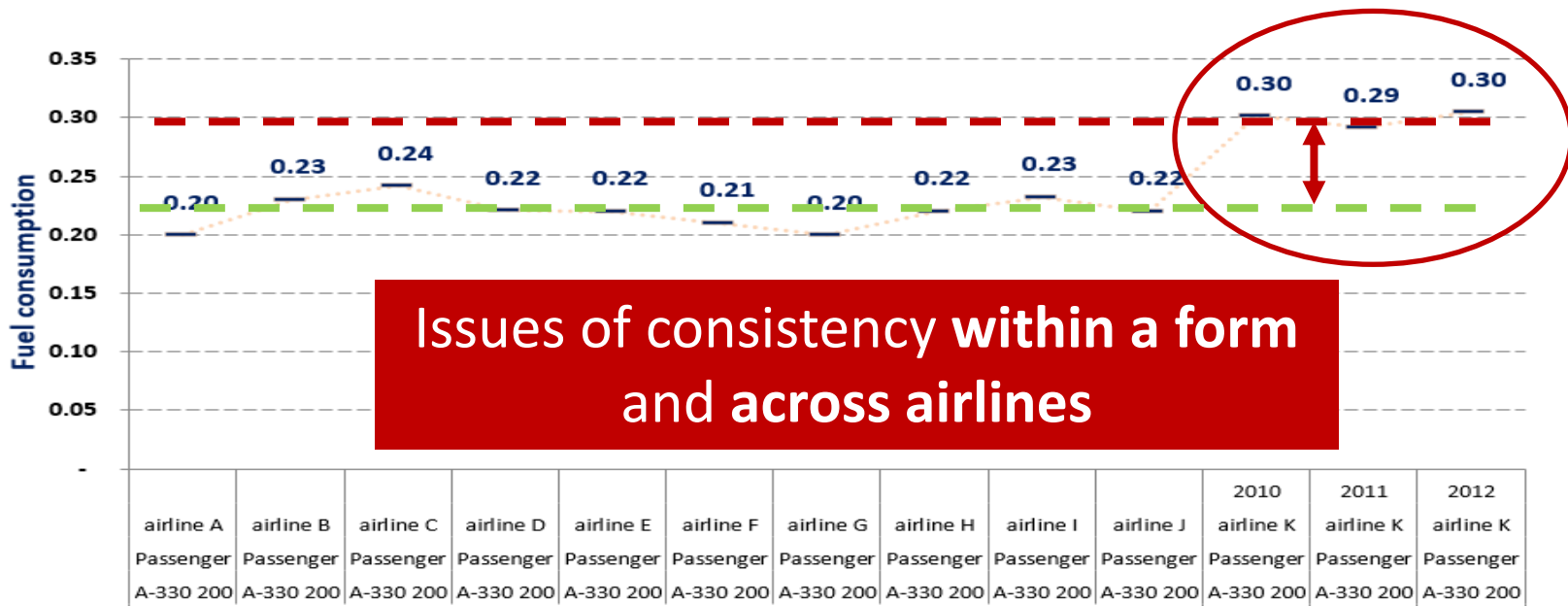


**Issue of consistency between forms**

## Benchmarking Analysis

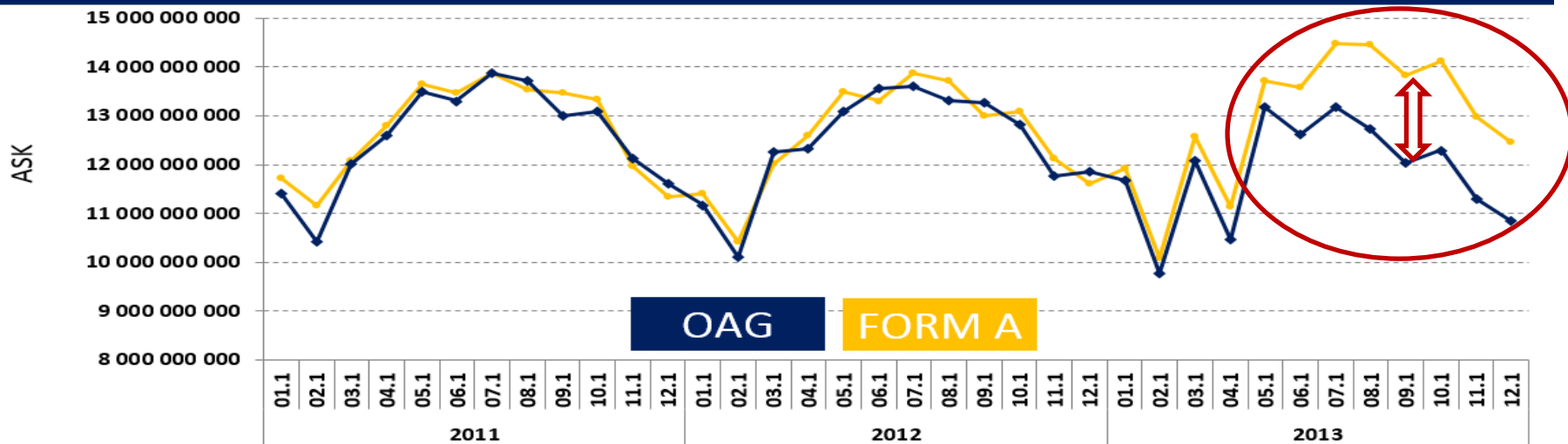
### AIRBUS 330-200 aircraft - Benchmark of fuel consumption

fuel consumption: (fuel in tonnes)/(Tonnes-km available in thousands)



## Consistency with OAG

Form A / AIRLINE ABC / INTERNATIONAL SCHEDULED SERVICES



Detection of issues



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More information and tools available at:

<http://www.icao.int/sustainability>

