Managing In-Flight Medical Emergencies

Moscow

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MedAire

An International SOS Company

EXPERT CARE, **EVERYWHERE.**

Disclosure

- Michael Braida is full time employee with International SOS and Medical Director for MedAire Europe a company providing ground-based medical support to commercial and business aviation
- Opinions herein expressed are the authors' only and not necessarily reflect the company's position

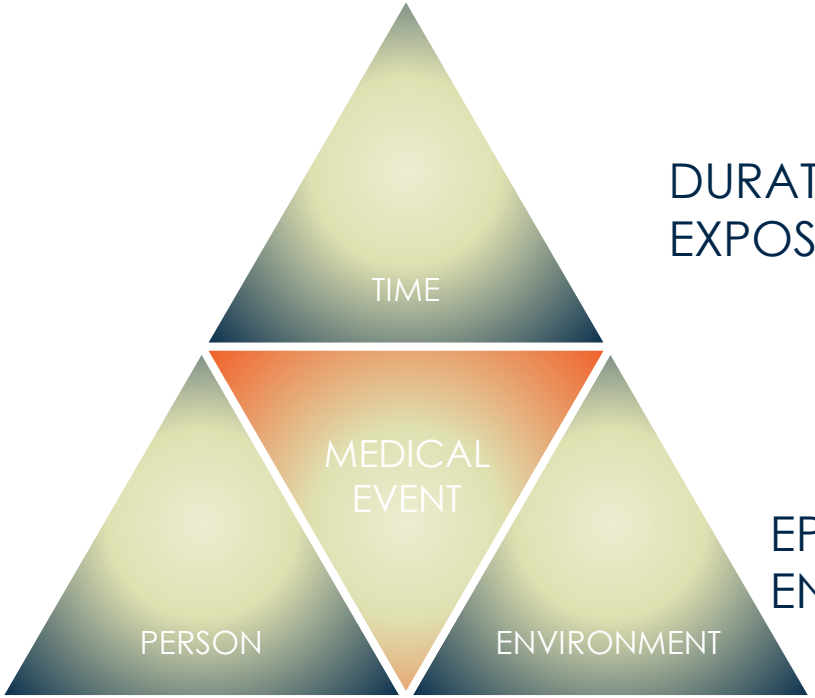
Introduction

- In-flight medical events (IFMEs) occur as a function of the number of passengers transported and the distance they fly

$$IFME = f(no\ of\ passengers\ \&\ distance\ flown)$$

- The handling IFMEs has changed significantly since the advent of structured ground-based medical support (GBMS).
- What is the extent and impact of GBMS today?

ELEMENTS OF A MEDICAL EVENT

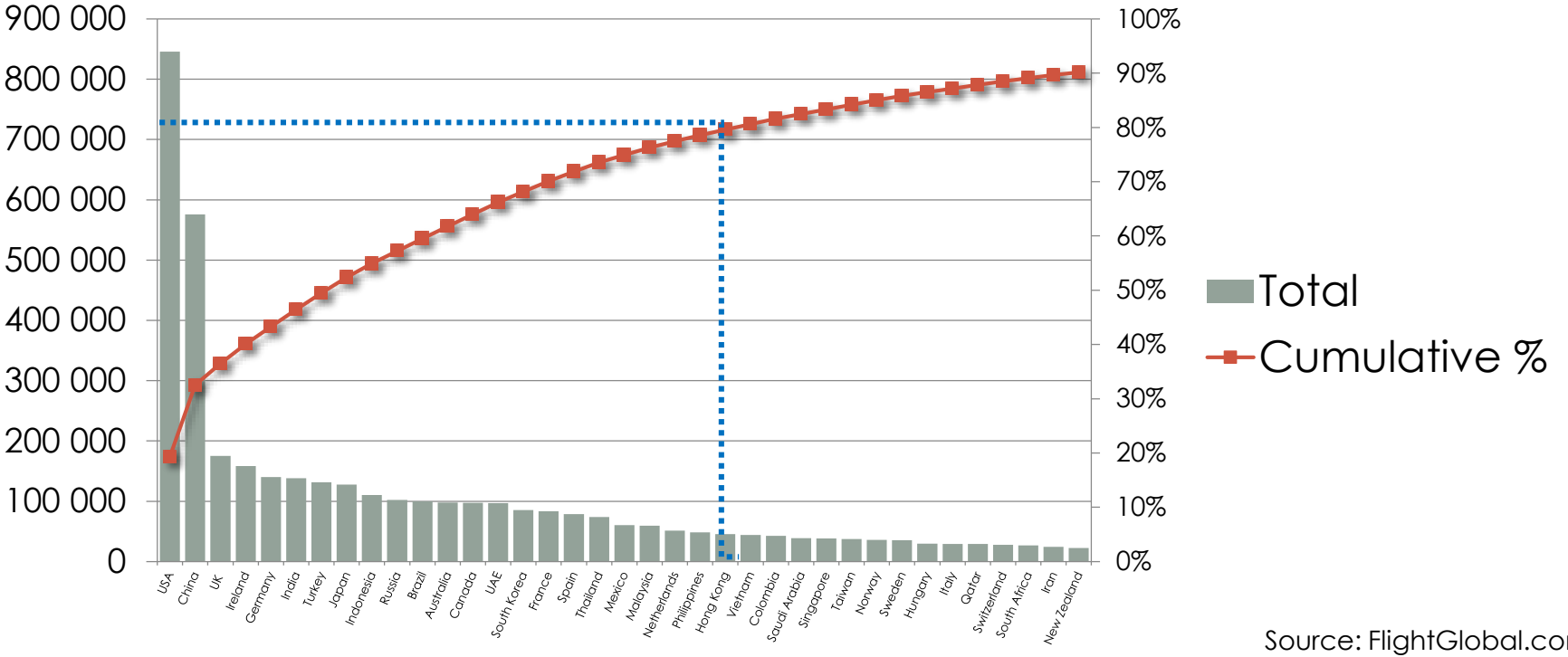


DURATION OF EXPOSURE | STAY

GENETICS | RISK FACTORS

EPIDEMICS | ENDEMICS

Passengers Carried by Country

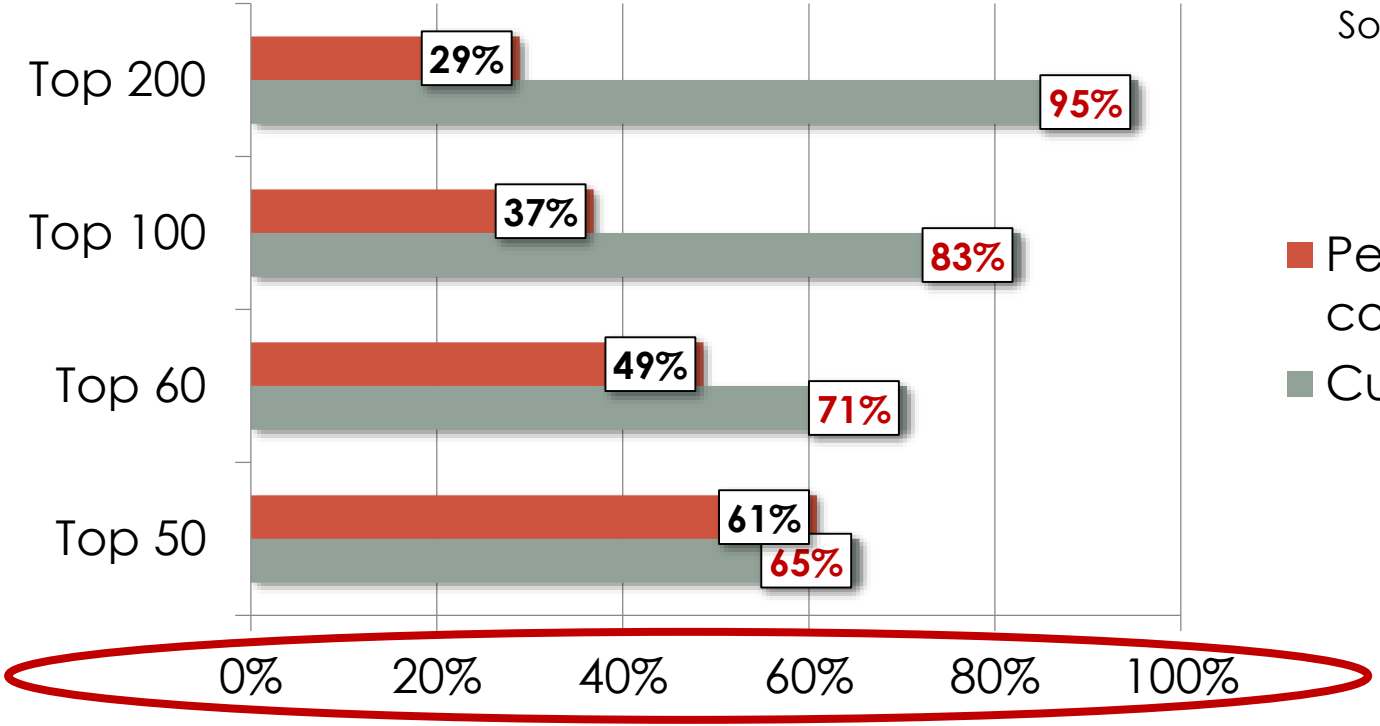


Source: FlightGlobal.com

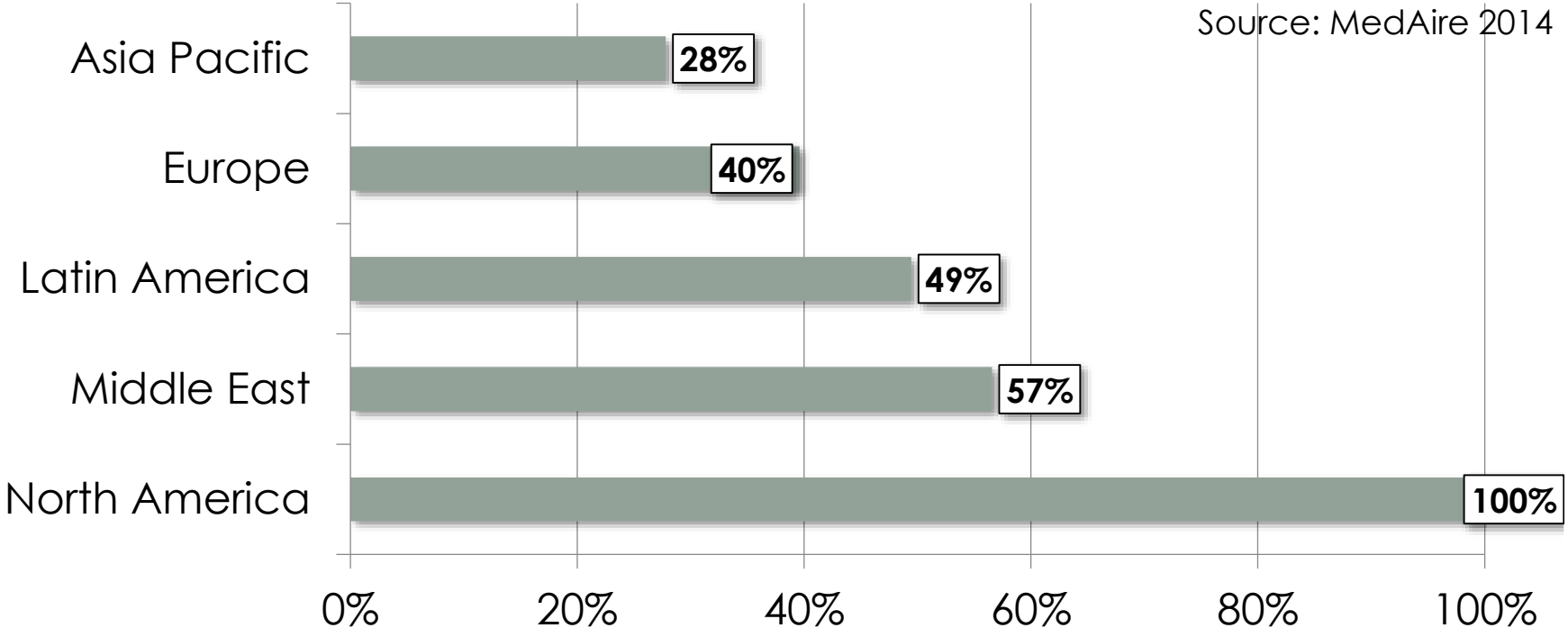
Background

- Medical **advice** is a common practice in **remote environments** both civilian and military
- There are multiple providers in the civil aviation and maritime sectors
  - **State** initiatives:
    - CIRM (Centro Internazionale Radio Medico) and the European countries
    - France and SAMU
  - **Private** initiatives
    - Mayo Clinic
    - MedAire
    - UPMC
    - International SOS
  - **Airline** medical departments
    - Korean Airlines
    - KLM

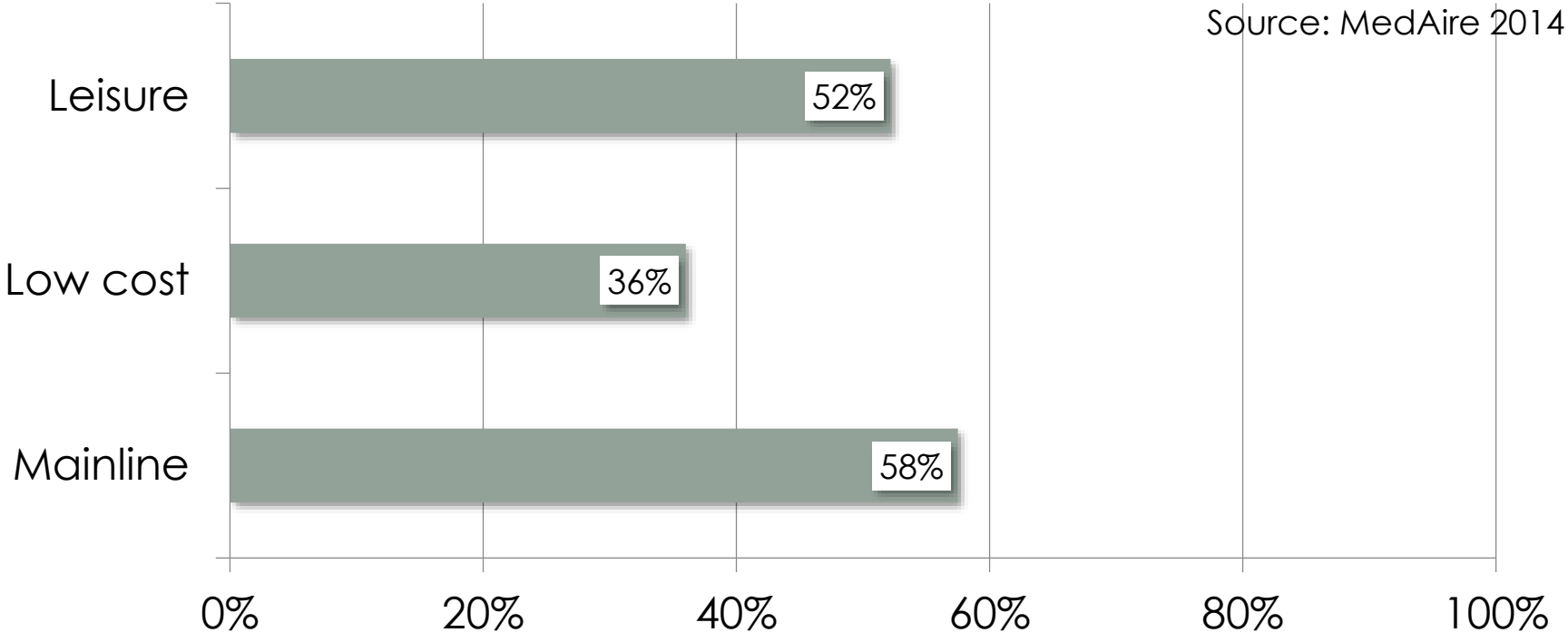
Percent of coverage / per Pax traffic



Pax percent of coverage per region



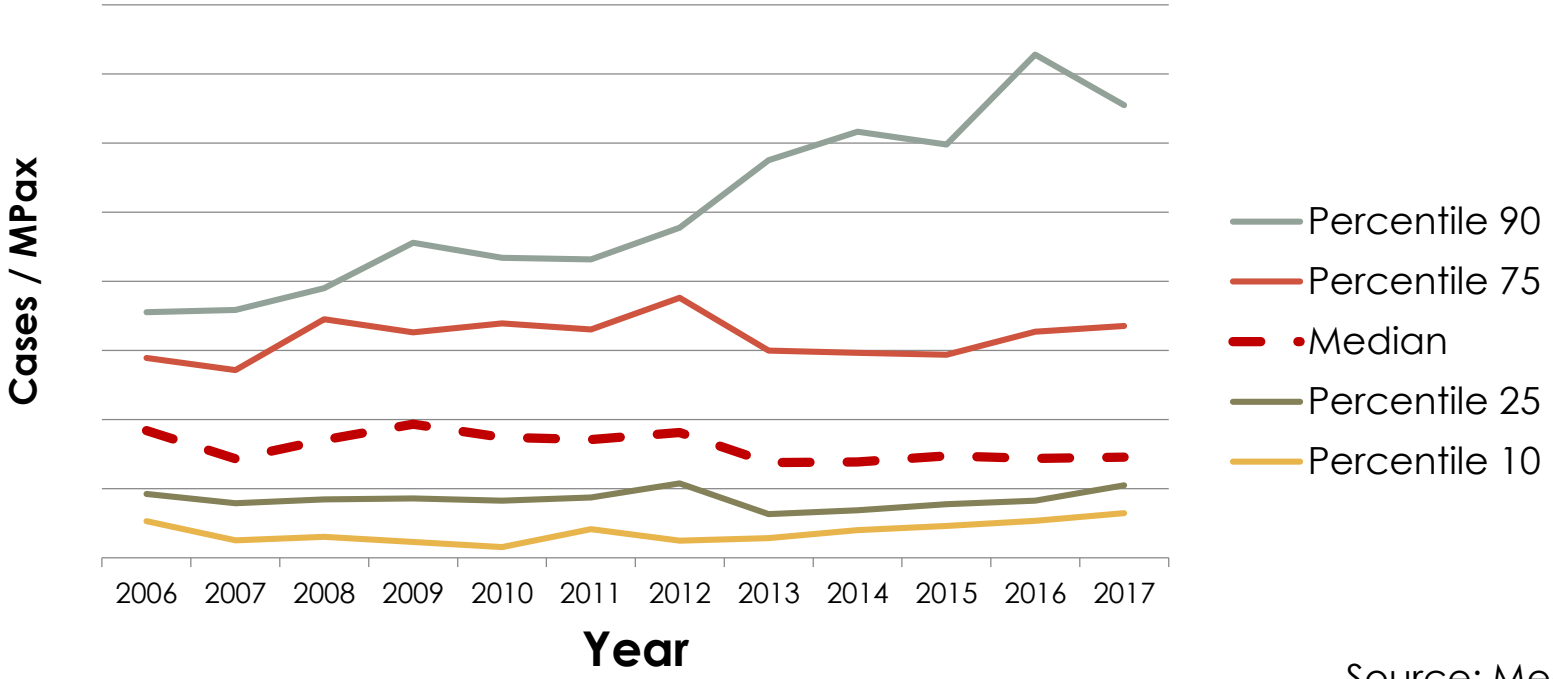
Pax percent coverage per airline category



What defines a medical event?

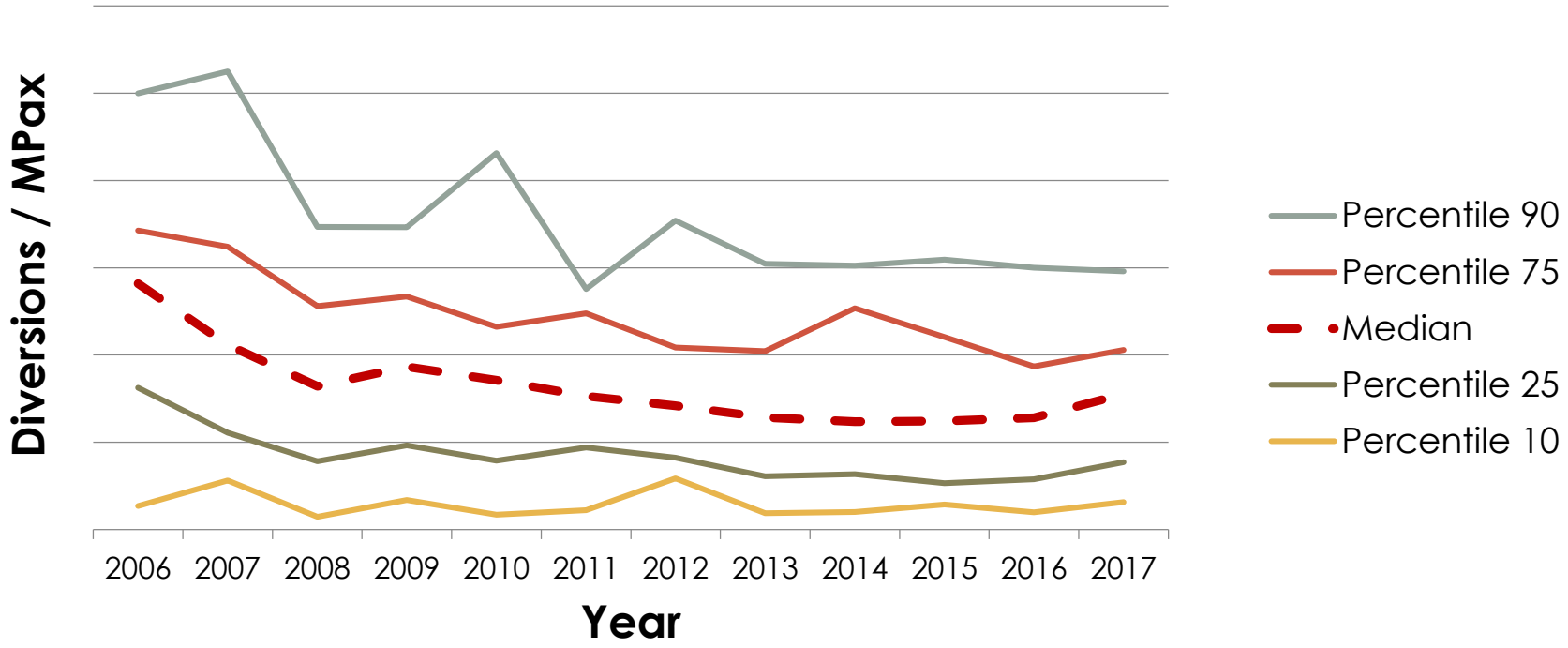
- ☐ Any health related event
- ☐ When we believe a doctor is needed
- ☑ When the FA (or someone else) decides so

In-flight medical events and pax carried



Source: MedAire

Diversions and pax carried

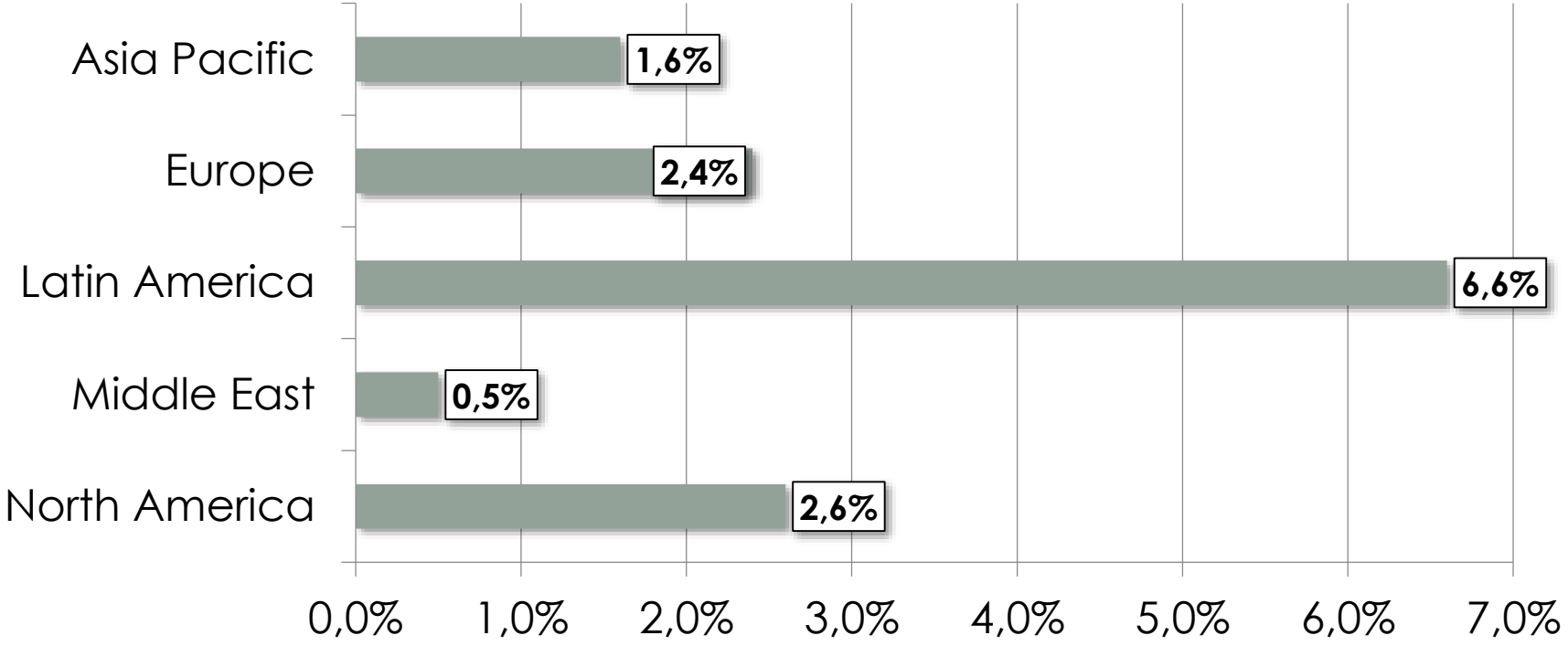


Source: MedAire

Timing and procedures

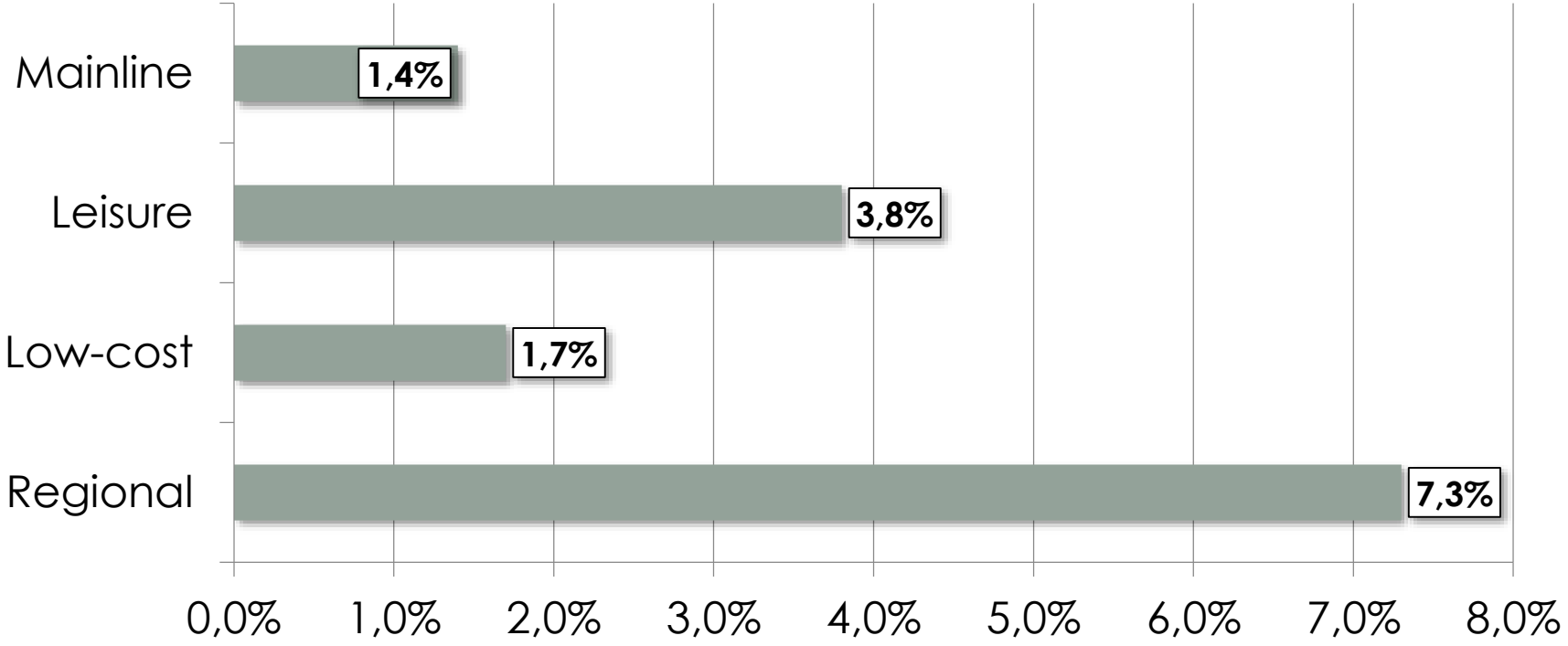
Diversion/case rate per region

Source: MedAire 2014

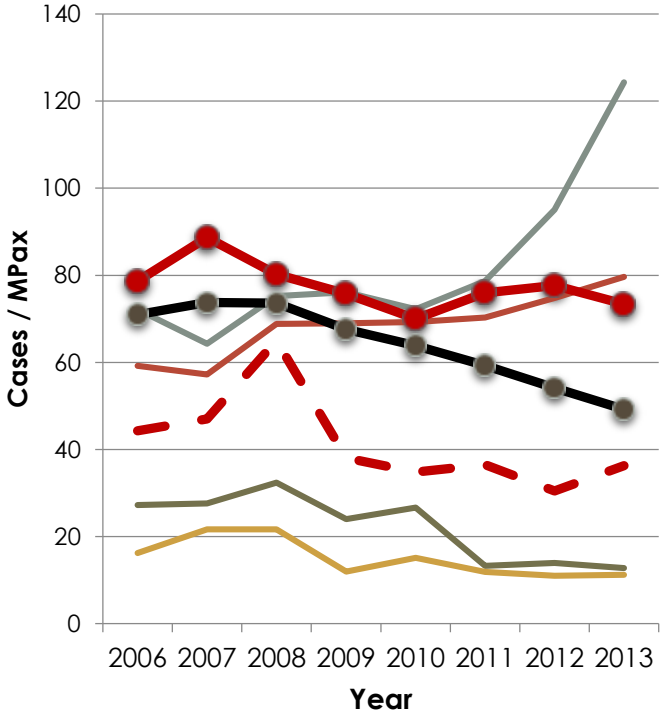


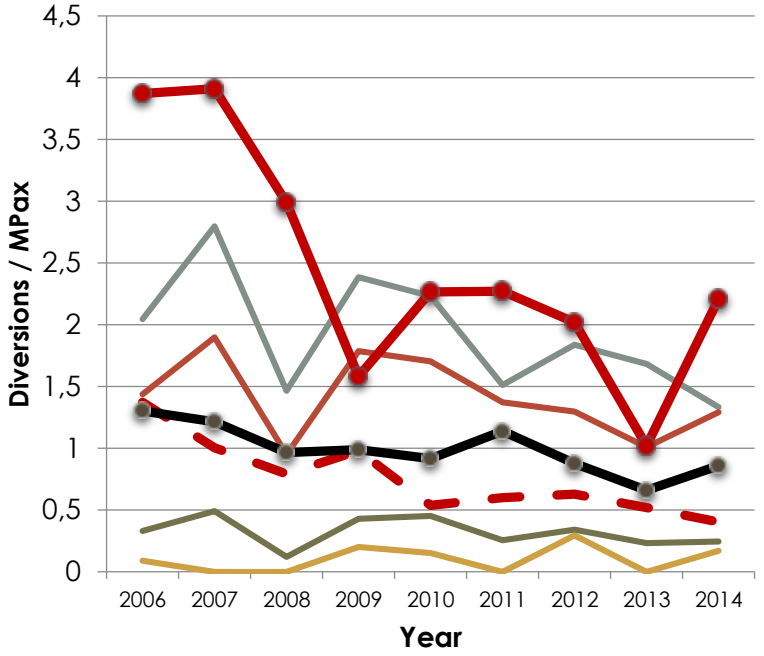
Diversion/case rate per category

Source: MedAire

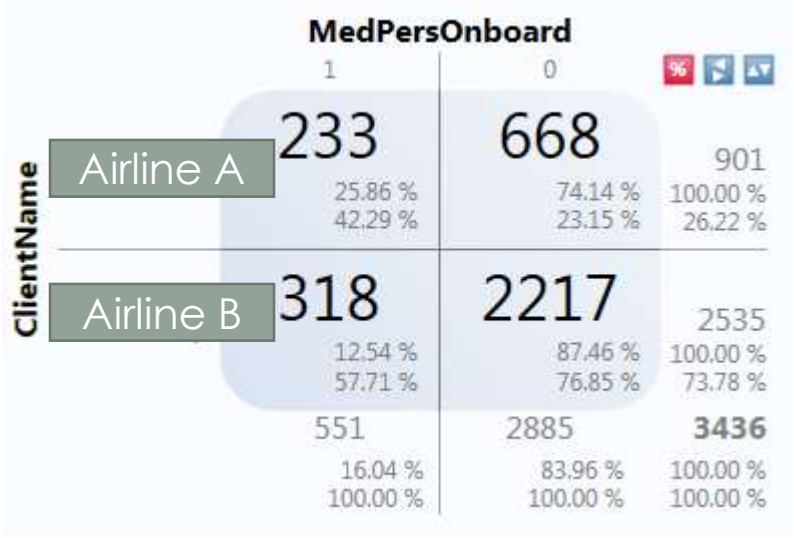


Two airlines comparison





Medical person on board



MedPersOnboard			
ClientName	1	0	%
Airline A	233 25.86 % 42.29 %	668 74.14 % 23.15 %	901 100.00 % 26.22 %
Airline B	318 12.54 % 57.71 %	2217 87.46 % 76.85 %	2535 100.00 % 73.78 %
	551 16.04 % 100.00 %	2885 83.96 % 100.00 %	**3436** 100.00 % 100.00 %

Single Table Analysis

Odds- and Risk-based parameters

	Estimate	Lower	Upper
Odds ratio	2.4317	2.0112	2.9402
MLE Odds ratio (Mid-P)	2.4310	2.0096	2.9389
Fisher-Exact		2.0006	2.9519
Risk ratio	2.0615	1.7726	2.3974
Risk difference	13.3158	10.1793	16.4522

Statistical Tests

	X^2	2 Tailed P
Uncorrected	87.5370	0.0000000000
Mantel-Haenszel	87.5115	0.0000000000
Corrected	86.5508	0.0000000000

	1 Tailed P	2 Tailed P
Mid-P Exact	0.0000000000	
Fisher-Exact	0.0000000000	0.0000000000

Source: MedAire

Diversions Chest Pain and ECG availability

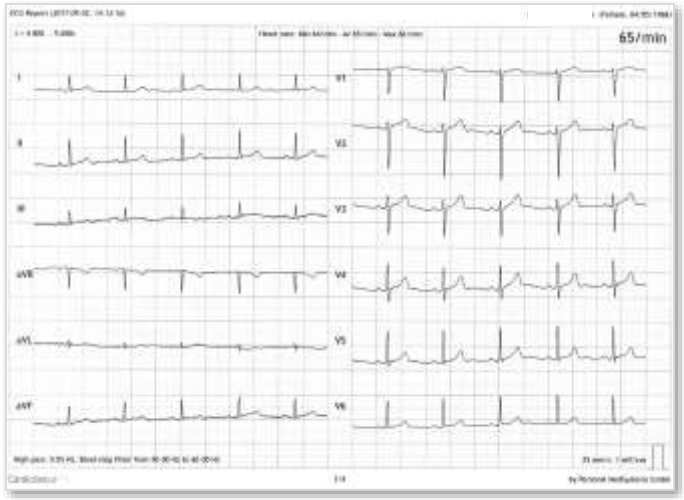
- Airlines carrying ECG devices are diverting less for chest pain cases
- Cases requiring immediate diversion are also identified

DidFlightDivert	1	0	%
No ECG	11 11.96 % 47.83 %	81 88.04 % 19.01 %	92 100.00 % 20.49 %
ECG	12 3.36 % 52.17 %	345 96.64 % 80.99 %	357 100.00 % 79.51 %
	23 5.12 % 100.00 %	426 94.88 % 100.00 %	449 100.00 % 100.00 %

Enhancing GBMS

- Crew training
  - Medical information capturing
  - Communication
  - Timing in activating GBMS
  - Incorporation into CRM joint scenarios
- Education of medical volunteers?
- Incorporation of new technologies
  - Communication
  - ECG

New Technologies – Inflight EKG



New Technologies - Telemedicine

- RDT Tempus IC2
  - Non-invasive blood pressure (NIBP)
  - Masimo® SET® pulse oximetry (SpO_2)
  - Medtronic Microstream® Capnometry
  - 12-Lead ECG
  - Handheld Bluetooth® enabled tympanic thermometer
  - Handheld Bluetooth® Glucometer
  - Wireless headset to communicate with GBMS
  - Video cam to send live video or snapshots to the GBMS

Conclusions

- GBMS has become an **established** practice in commercial aviation
- **Utilization** varies between different service providers, airlines, airline region and type of operation
- Data suggest progressive **reduction** of unnecessary medical diversions
- How GBMS are utilized is associated with different **diversion rates**
- New **Technologies** can increase effectiveness of GBMS

Thank you!!