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INTERNATIONAL CIVIL AVIATION ORGANIZATION

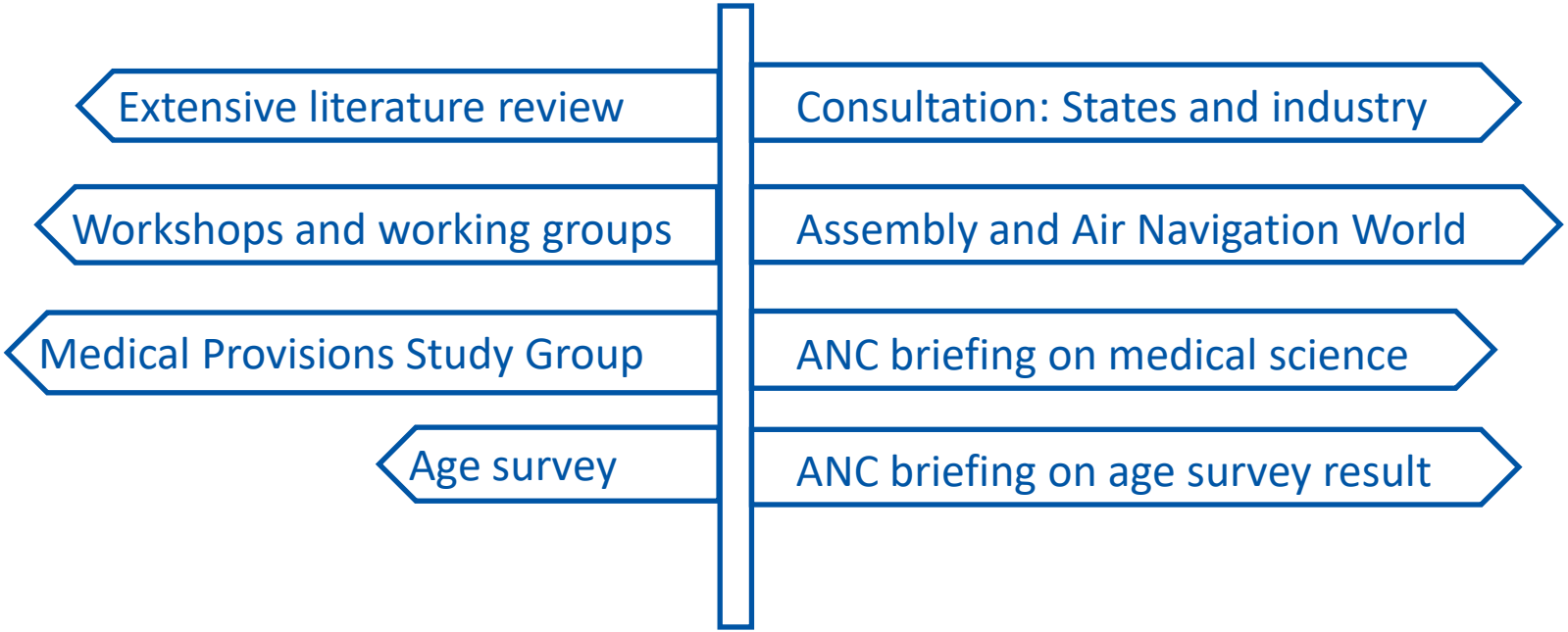
A UN SPECIALIZED AGENCY

Outcomes of the ICAO survey on pilot upper age limit

ASMA

June 2025

ICAO activities: Commercial pilot upper age limit Standard



Risk assessment and the commercial pilot upper age limit

- **Unmitigated risk** can negatively affect aviation safety

- **Probability of risk** increases with age
  - Physical, physiological and cognitive limitations
  - Occupational factors – fatigue, sleep disorders
  - Individual variability

Standard needs to be risk based, evidence informed and results-based

Risk mitigation: commercial pilot upper age limit

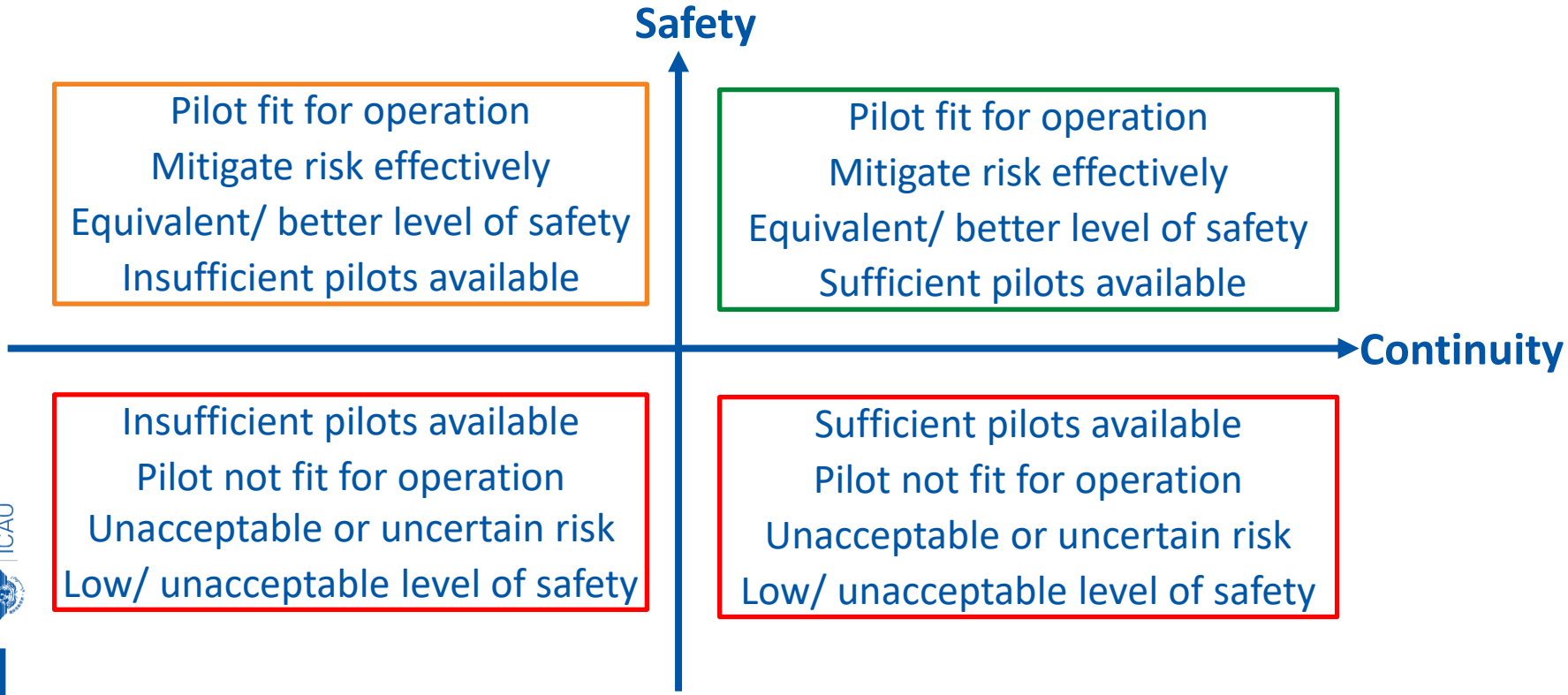
- Mitigate the risk of sudden or subtle **pilot incapacitation**:
  - System ability and capacity
  - **Prevent, detect and mitigate** the **risk to an acceptable level**
  - **Combination of measures**: systemic, medical and operational

Collaborative approach

The big picture for SARPs development in ICAO

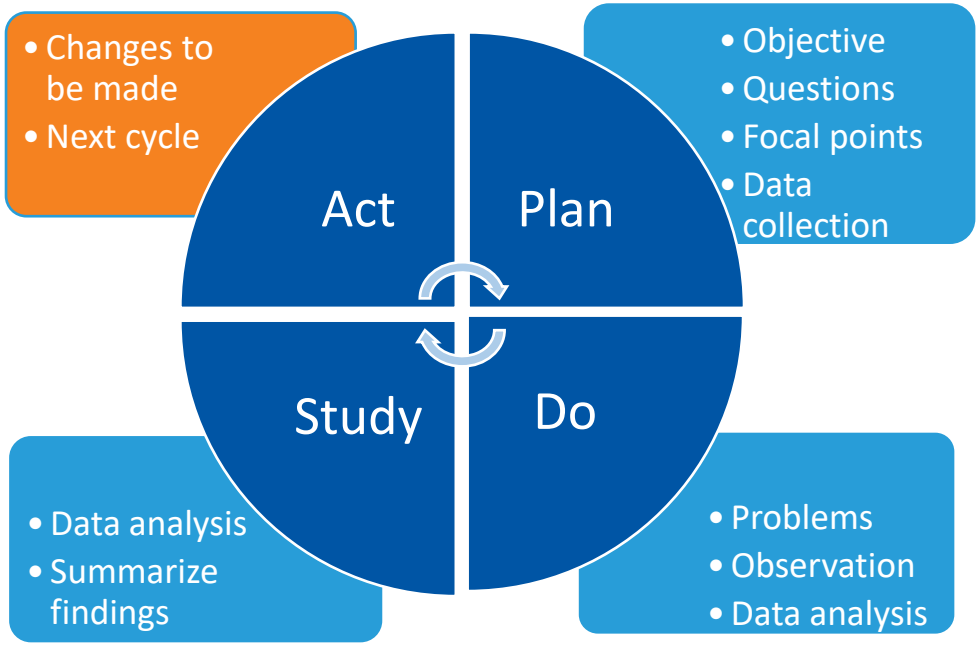
Strategic objectives	• Aviation safety, Continuity of operations, NCLB (3)
Considerations	• System approach - medical certification is one component • No unfair discrimination • No country left behind - 193 ICAO states • Availability of pilots for operational needs
Role of Aviation Medicine	• Medical fitness for type of operation • Identify and mitigate pilot incapacity risk • Applicability in future: medical science & aviation technology

Alignment with Strategic Objectives



Safety Management and Aviation Medicine

1. **What** do we want to accomplish?
2. What **potential changes** can we make?
3. How will we **evaluate and monitor** that it is an improvement?



Source: The Health Care Data Guide: Learning from data for improvement 2nd edition, Provost and Murray

Area of change	SARPs	No Country Left Behind	Medical	Operational
Potential change	Maintain age Increase age No age limit State agreements	Guidance Training Implementation assistance	Improve system Refine risk-based assessment Scientific updates	Operation type Training Technology Data sharing
Assess	Compliance and State survey	State capacity to implement	Medical processes & resources	Operational and safety data
Measure	State agreements USOAP Follow-up survey Annual report	Implementation reports USOAP Follow-up survey	Certificate data Pilot incapacity USOAP Follow-up survey	Occurrences Incidents Accidents Follow-up survey

IACO Health Promotion Standard

1.2.4.2 States shall **apply** … basic **safety management principles to the medical assessment process** … that as a minimum include:

a) **routine analysis of in-flight incapacitation events and medical findings** during medical assessments to **identify areas of increased medical risk**; and
b) **continuous re-evaluation** of the medical assessment process to concentrate on **identified** areas of increased medical risk.

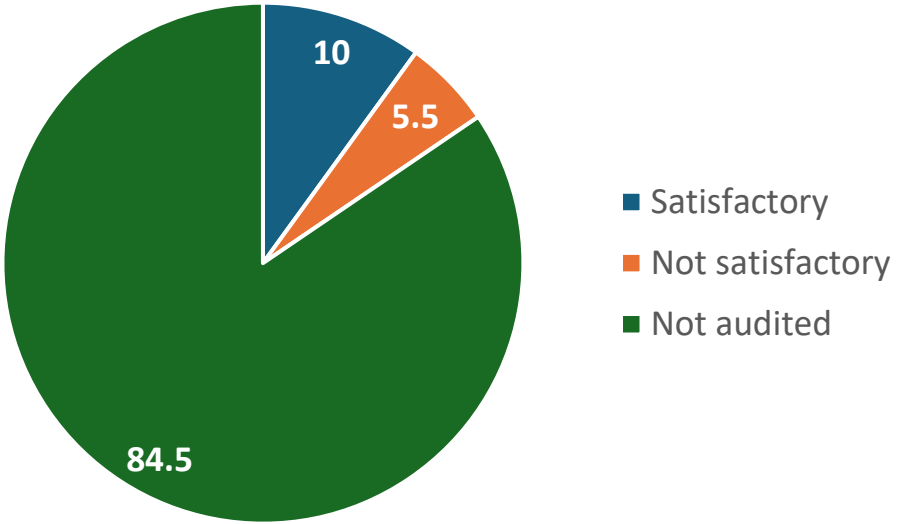
1.2.4.3 The Licensing Authority shall **implement appropriate aviation-related health promotion** for license holders … to reduce future medical risks to flight safety.

1.2.4.2 - **how appropriate topics** for health promotion activities may be determined.

Identifying risk and health promotion

USOAP audit results (medical findings and health promotion)

USOAP audit findings: health promotion (%)

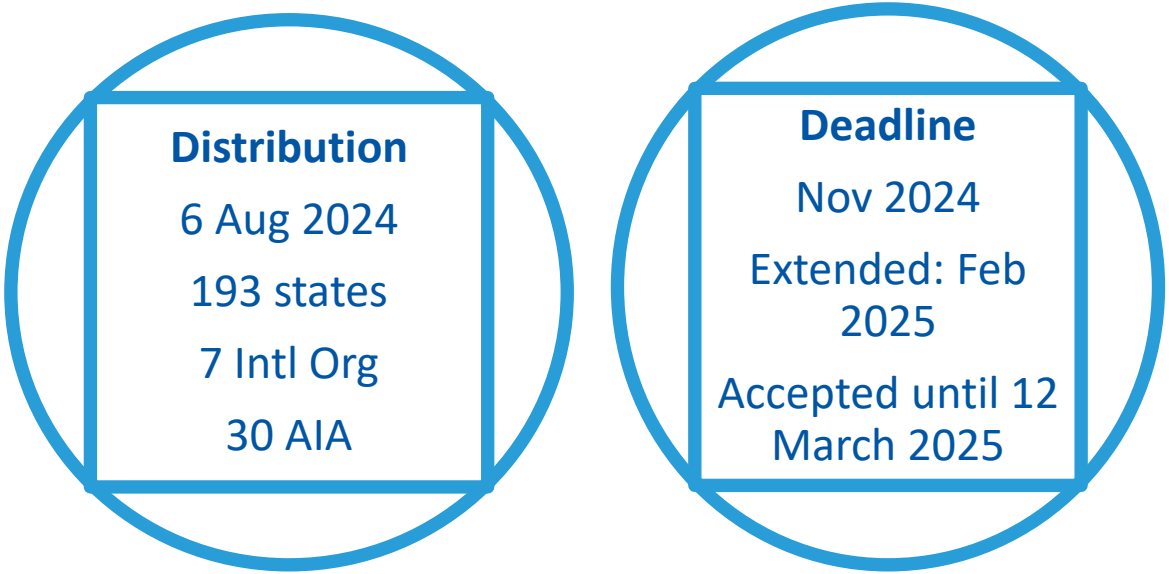


Contributory factors

- Insufficient guidance material
- Limited data availability
- Resource limitations

Guidance material and training

Age survey



7 months
70 states responded (36%)

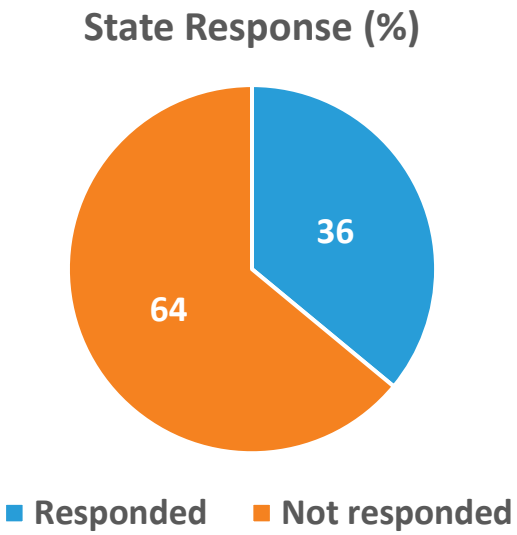
Information requested in survey

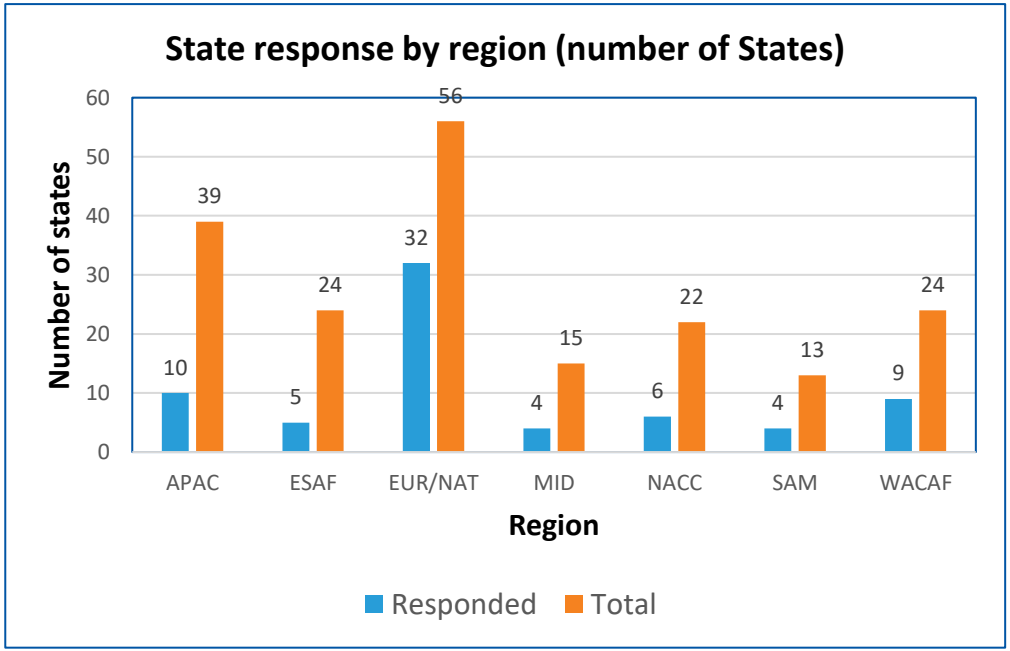
- Format: open ended question and tables
- Definitions - medical certification outcomes, incapacity, etc.
- Processes - aeromedical decision-making
- Collaboration within CAA and stakeholders
- Data
  - Number of pilot applications and outcomes
  - Data on medical risk, incapacity, accidents
  - Disease systems and diagnosis
- Experience of states certifying pilot above the age of 65

Response rate representative?

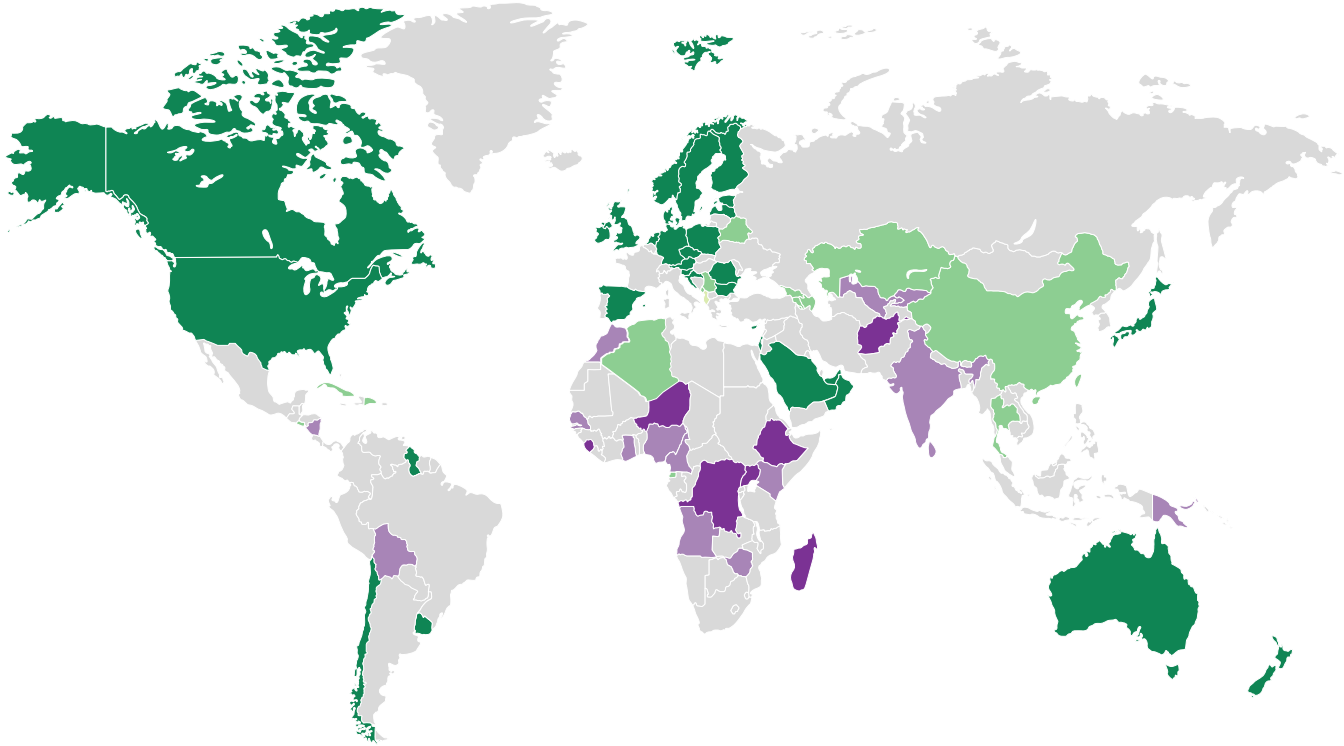
ICAO response rate to state letters varies: 50-90 (26 - 47%)

Age survey response: 70 (36%)





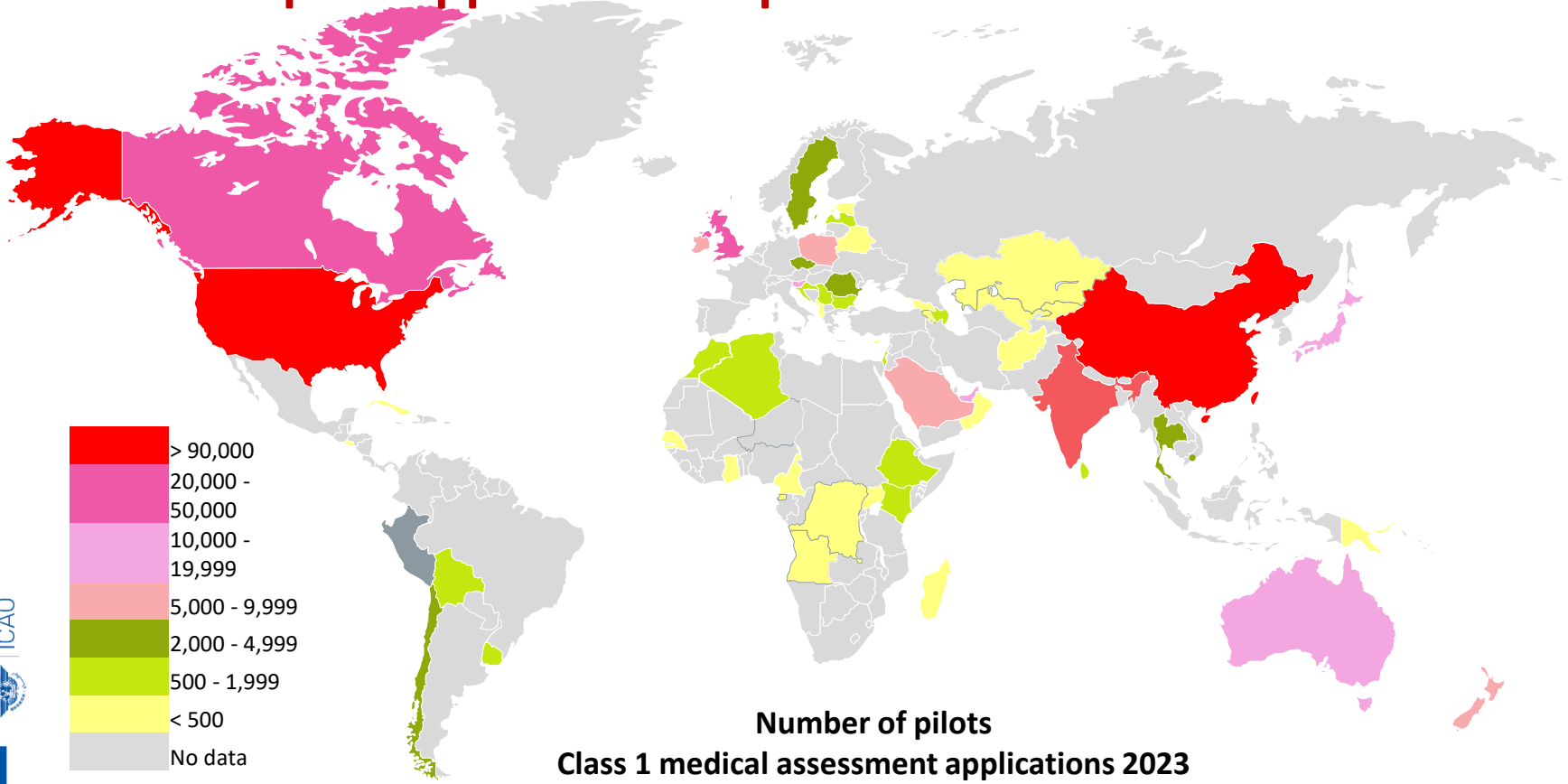
Geographic and income distribution representative?



Participating countries – by income classification (World Bank 2023)

Low income | Lower middle income | Upper middle income | High income

Number of pilot applications representative?



Number of pilots
Class 1 medical assessment applications 2023

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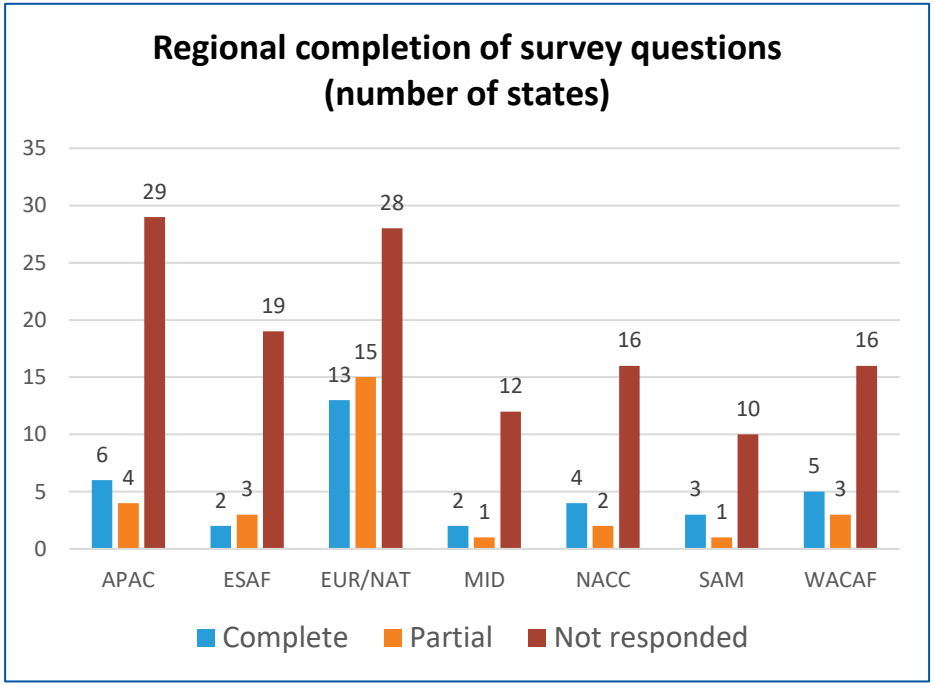
Quality of response to questions reliable?



Variable quality of answers

- Not relevant to the question
- Not clear
- Sufficient information provided to understand status
- Additional information
  - providing good insight
  - potential factors to consider for mitigation
  - suggestions for improvement of survey

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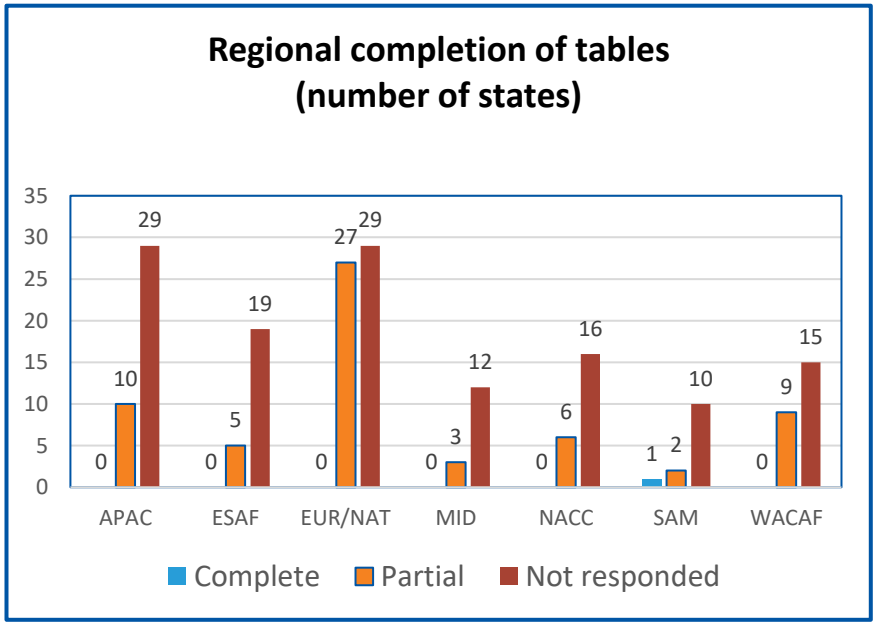
Quality of response to tables reliable?



Variable completion of tables

- Not completed
- Limited number completed
- Data not clear
- Some states sufficient and high- quality data
- Lesson learned: develop better data collection tools

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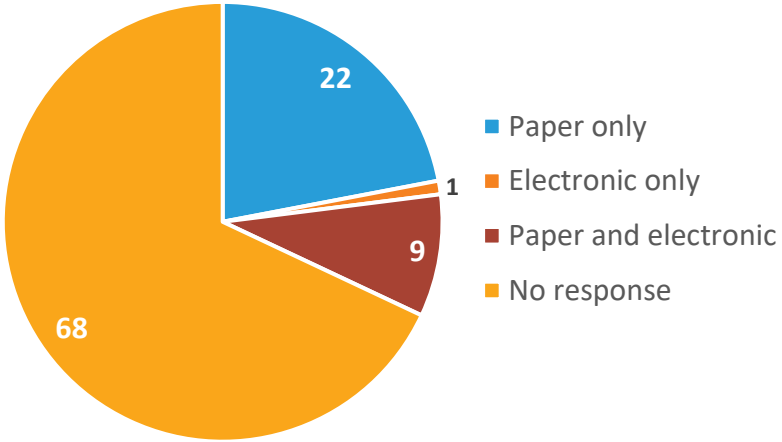
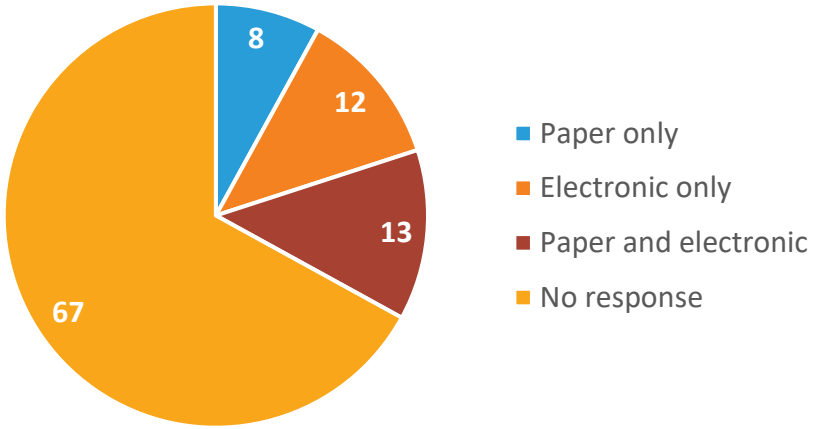
Medical certificates

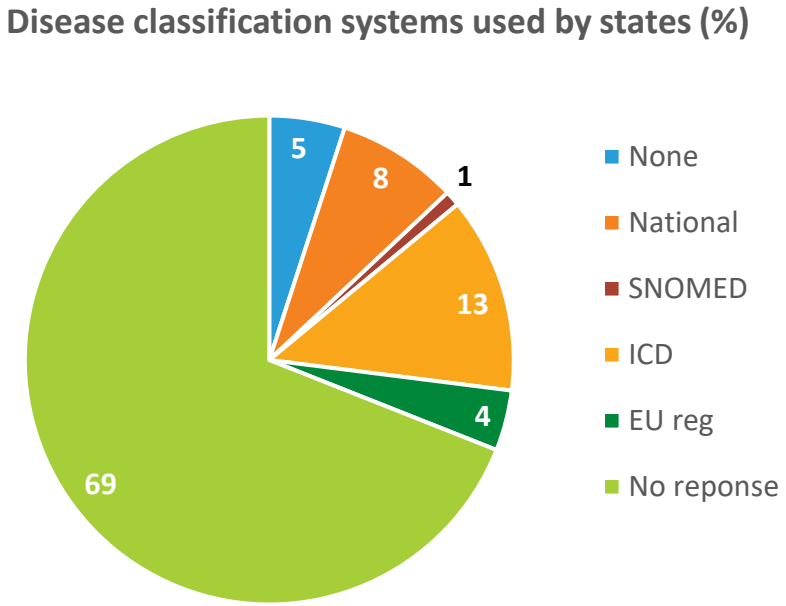
Format of issuance of medical certificates (% of States)



Storage of medical certificates (% of States)



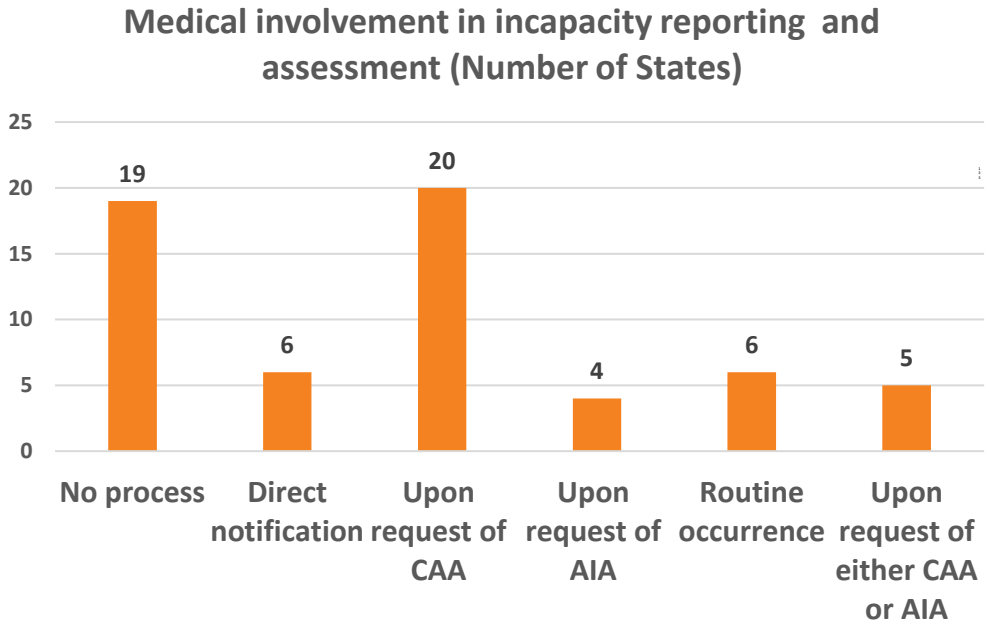
Disease classification systems



Advantages of comparable disease classification systems

- Consistent data categories
- Reliable data
- Comparable data analysis
- Evidence based decision-making
- Informs areas of potential risk
- Informs health promotion areas
- Enables risk-based medical policies and guidance

Analysis of in-flight incapacity events



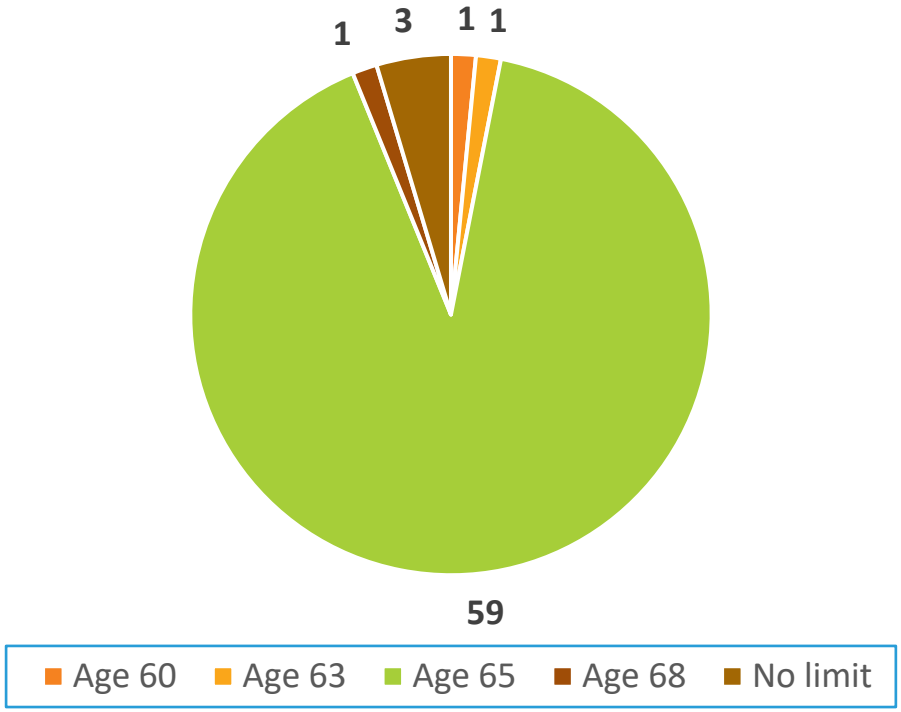
Anonymized reporting system results in inaccurate in-flight incapacitation data, often not being reported at all

The legislated separation between CAA and the AIA results in no access or complicated access to data

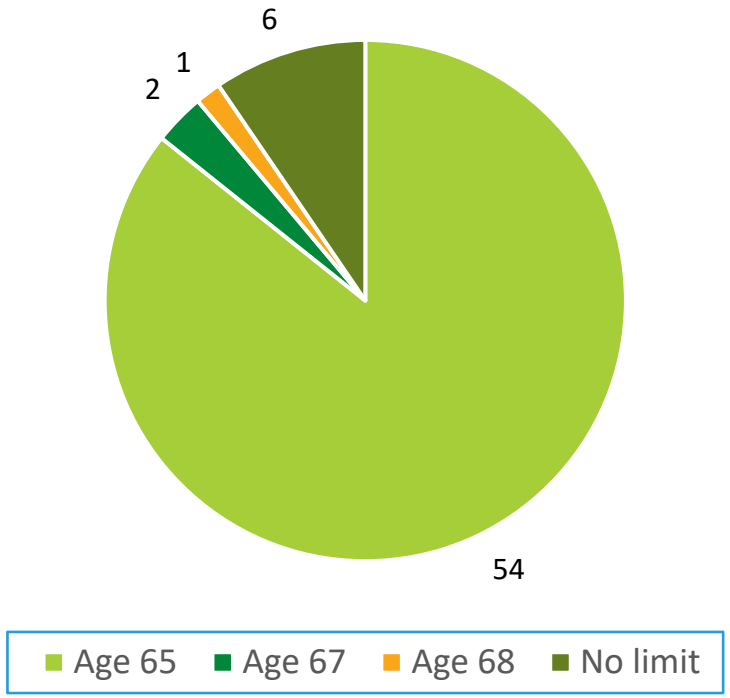
Current upper age limit

Note: excludes 66% that did not respond

Multi-crew: international operations

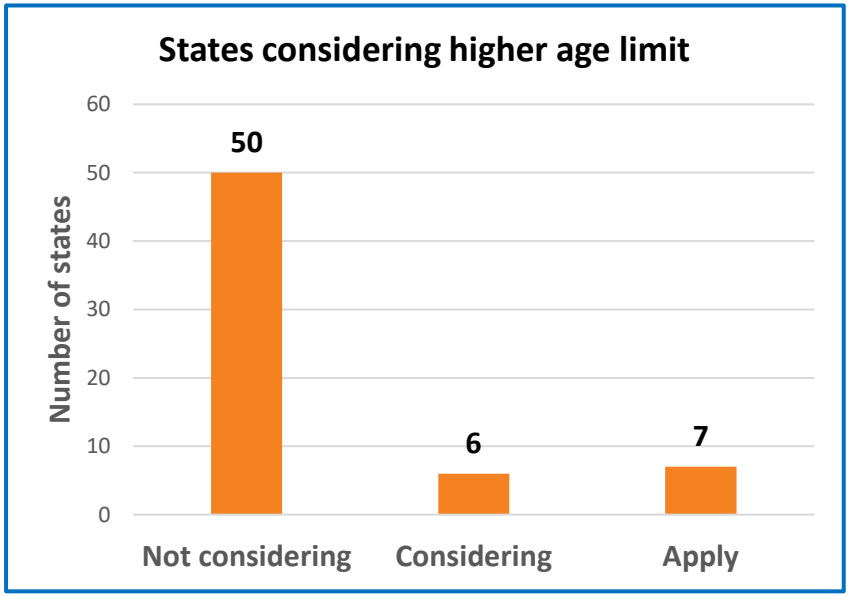


Multi-crew: Domestic operations



Current pilot upper age limit

States considering increasing the upper age limit



Note: excludes 66% that did not respond

- Neurocognitive function
- Role of training or operational performance assessment
- Collaboration: training, operational and aeromedical departments

General comments from States

- Pilot numbers **decline progressively** from age 60, drops significantly after 70
- Impaired **cognitive function** and increased reaction times bigger risk when compared to physical disease
- Medical issues can be detected during **training or operational performance**
- **Operational based assessments** are useful where there are potential medical concerns
- **Collaboration** between the training, operational and aeromedical departments are critical

Comments from states on providing data

Data system

No electronic system

In process of digital transformation

Modification needed to provide age-related data

Resources

No resources

Resource constraints

Need capacity building in data collection and analysis

Legislation

Data confidentiality

Need data governance policy & procedures

Data availability

Not able to extract data

No consolidated/ aggregate data

Incident data not correlated with age

Sharing data

Not verified/ permitted to share

Need coordinated system for sharing

Utilize interdependence with stakeholders

Summary of data challenges

- Data **confidentiality**

Discussions ICAO Legal department
Value of aggregated data

- Medical certificate data
  - **Limited representative** data, including states certifying pilots > 65
  - Data that is available is **not standardized or comparable**

- Data availability if pilot **leaves the system**
  - No data on pilots choosing not to renew (**reason for non-renewal**)
  - No visibility on health status after **retirement** date

? need for exit and/or post retirement data

Summary of data challenges

- In-flight incapacity data: not available to the **aviation medical section**

- Accident and incident data:
  - **limited sharing** with aviation medical sections
  - low numbers and seemingly rare (? under reported)
  - Difficult to analyze statistically

SARPs/ guidance/ templates for collection, collaboration and sharing of data

The way forward with current limited data

Conclusion

- Absence of evidence is not evidence of absence
- Difficult to demonstrate that a situation is safe or not safe
- Current aviation medical and operational **data too limited** to make an **evidence-informed decision** on the upper age limit

The way forward with current limited data

Solutions

- **Collaboration** and agreements
- Structured approach to **remove identified barriers**
- Better **data** collection tools and procedures
- Improve **system** to better **assess risk**
- Develop **support system** for medical examiners and assessors
- Harmonized practices, procedures and **risk management methodology** (to the greatest extent possible)

Barriers to reciprocal acceptance of medical certificates

- Lack of standardized **definitions** of medical outcomes
- Lack of standardized **processes and levels of decision-making**
- Limited availability of **medical examiners**
- Limited availability of and support for **Medical Assessors**
- Inconsistent use of **accredited medical conclusion**
- Inconsistent use of **practical medical flight test**

Develop tools, provide guidance material and provide implementation assistance

Aeromedical risk management framework

- **Individual** risk assessment

  Where we want to be, but not there yet

- **ICAO**: Global risk threshold and mitigation

  Health promotion

  Risk methodology, framework, tools

  SARPs, guidance, acceptability, training, implementation assistance

Integrated risk assessment framework to be developed to assess and mitigate risk, which can be standardized to promote harmonization of standards.

Aeromedical risk management framework

- **State** risk threshold and agreements (bilateral, multilateral, regional)

  Bow-tie (Authority)

  Risk matrices (medical assessors/ medical examiners)

  Specific assessments: **operational or other** (science-based, performance-based, industry collaboration)

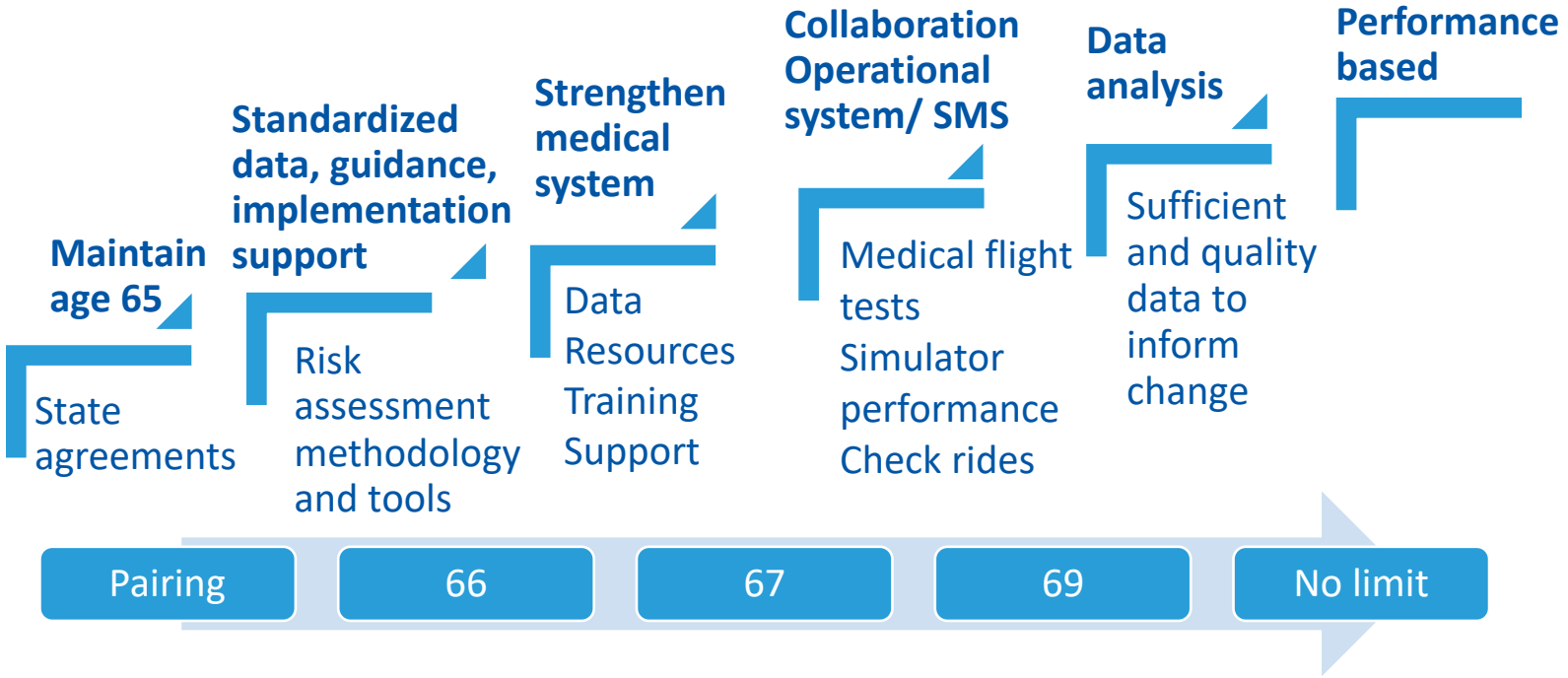
- **Risk mitigation**

  General for **groups**

  Specific for **individuals** based on risk assessment

Road map to improvement

Step-based approach from a prescriptive to a risk-based and performance-based standard



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Q3 2026 • MONTREAL, CANADA

Thank You

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