

Qualitative vs Quantitative

Two ways of understanding security information



Two different lenses

Numbers show scale; words help explain meaning and context

Quantitative

Looks at how much, how many and how often

Qualitative

Looks at what, why and how people experience and interpret events



What is quantitative?

Information expressed through numbers, counts, rates and measurements



Quantitative examples

Numbers, counts, rates and measurements used in aviation security



For professional discussion and reflection • Illustrative, not prescriptive • Quantitative and qualitative information should be considered together with context, evidence, professional judgement and appropriate organisational, operational, intelligence and risk-management processes.

What is qualitative?

Information describing experiences, observations, behaviours and perceptions



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Qualitative examples

Real-world sources of qualitative information in aviation security



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What numbers reveal

Quantitative data helps identify scale, frequency, patterns, trends and change



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What numbers can hide

A metric may show what happened, but not explain why

No explanation

Numbers show a reduction, but do not explain the reason.



Hidden context

Changes in operations, staffing or traffic levels may influence the result.



Quality of data

Under-reporting or inconsistent recording can make numbers misleading.



Security incidents



No view of behaviour

Numbers do not show staff perceptions, motivation or the quality of decision-making.



May hide emerging risks

A low number today does not mean the risk has gone away.



Needs supporting evidence

Combine with qualitative information to understand the full picture.



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Turning evidence into decisions

Combining quantitative data and qualitative insight to build a clearer picture



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Best practice for using evidence

Key principles for combining quantitative and qualitative information



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Combining the evidence

A more complete, reliable and actionable understanding



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Qualitative + quantitative in practice

How different forms of evidence can reveal different parts of the same issue

1 Passenger screening

Combining data and feedback to understand where delays occur and why.

Quantitative data

- Wait times (minutes)
- Throughput (passengers/hour)
- Alarm rates (%)
- Re-screen rates

Qualitative insight

- Passenger feedback and experience
- Staff observations
- Operational challenges
- Behaviour and attitudes

Together they show

- Where delays occur
- Why they occur
- What can be improved

2 Security reporting

Combining data and experience to distinguish risk from reporting culture.

Quantitative data

- Number of reports
- Reporting frequency
- Types of reports
- Trends over time

Qualitative insight

- Staff confidence in reporting
- Quality and detail of reports
- Reasons for not reporting
- Organisational culture

Together they show

- Increased reports may indicate higher risk or improved culture
- What types of risks are emerging
- Where additional support is needed

3 Security training

Combining results and feedback to understand capability and real-world application.

Quantitative data

- Training completion rates
- Assessment scores
- Time to complete
- Role-based participation

Qualitative insight

- Staff feedback on relevance
- Observed application in the workplace
- Confidence and competence
- Suggestions for improvement

Together they show

- Completion does not always mean capability
- What is working well
- Where further support or changes are needed

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A continuous improvement approach

Using quantitative and qualitative data to drive ongoing improvement



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Key takeaways and next steps

Using quantitative and qualitative data to make better decisions in aviation security

1 Use both types

Quantitative and qualitative data together provide a fuller, more reliable picture.

Quantitative Qualitative

2 Focus on quality

Accurate, relevant and contextual data leads to more useful insights.

3 Apply to real risks

Use data to inform prevention, detection, response and long term resilience.

4 Review and improve

Continuously monitor, assess and adapt based on new information and lessons learned.

Monitor Review Improve Adapt

5 Take action

Turn insights into proportionate, practical actions that strengthen aviation security.

People Processes Technology Partnerships

From data to safer aviation

- Better awareness
- Earlier detection
- More effective decisions
- Stronger collaboration
- Improved resilience

Next steps...

- Review current data use
- Identify gaps
- Develop action plan
- Engage stakeholders
- Measure progress

DATA INSIGHTS

RISK MANAGEMENT

OPERATIONAL RESILIENCE

CONTINUOUS IMPROVEMENT

PEOPLE

PROCESSES

TECHNOLOGY

PARTNERSHIPS

SAFER AVIATION