



SAFE SKIES.  
**SUSTAINABLE  
FUTURE.**



| ICAO



# Operational Challenges and Best Practices in Managing GNSS RFI: Thai Airways' Approach

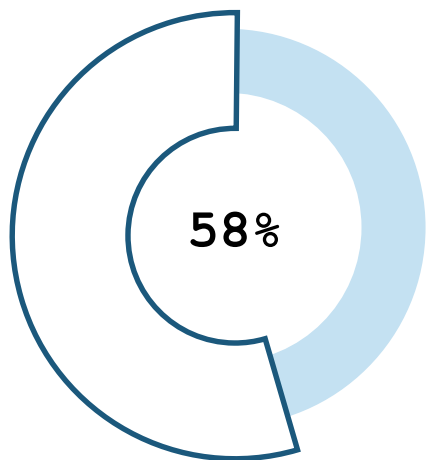
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Captain Treekun Treeriya

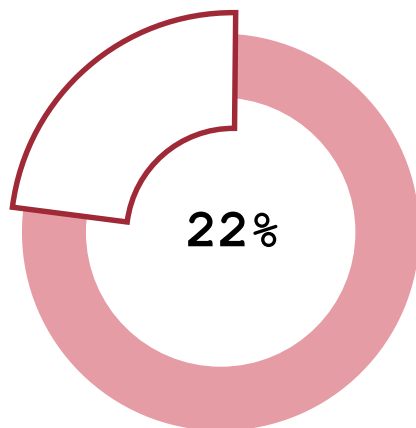


# GPS Lost and Spoofing

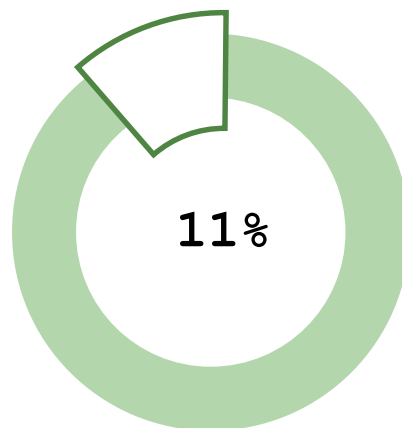
2024 - 2025 Statistics Report



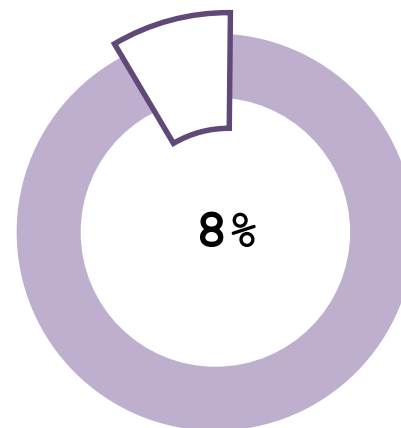
Boeing 777



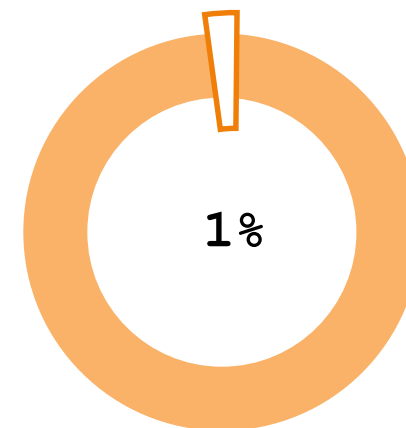
Airbus 320



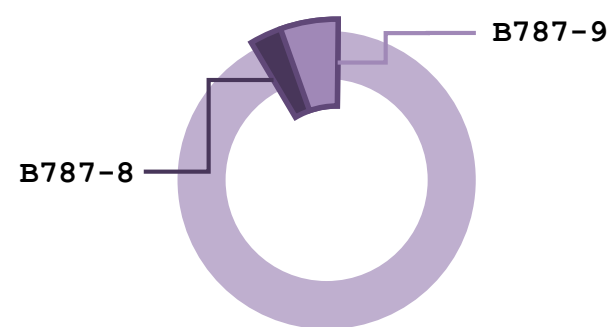
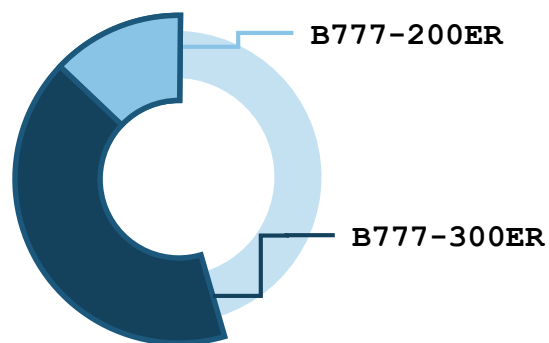
Airbus 350



Boeing 787

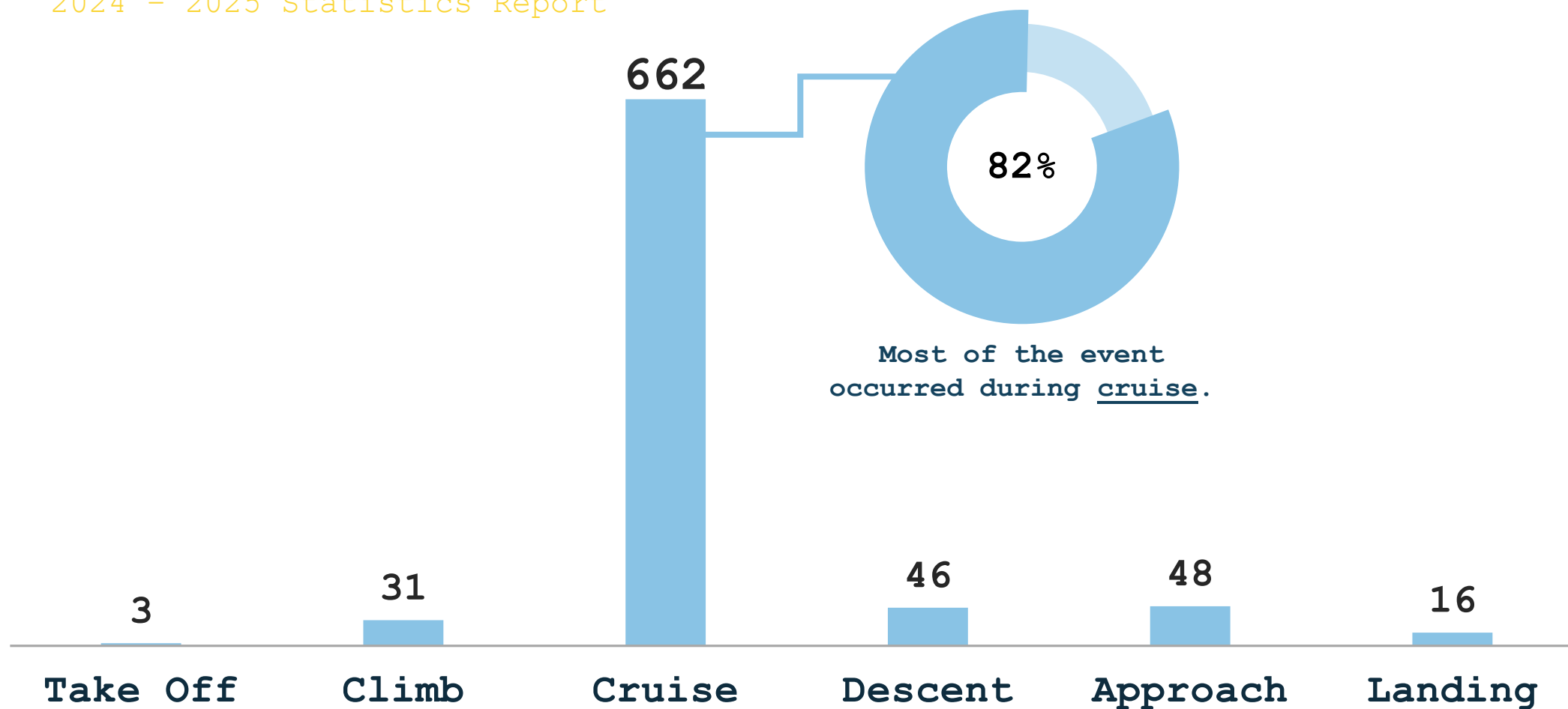


Airbus 330



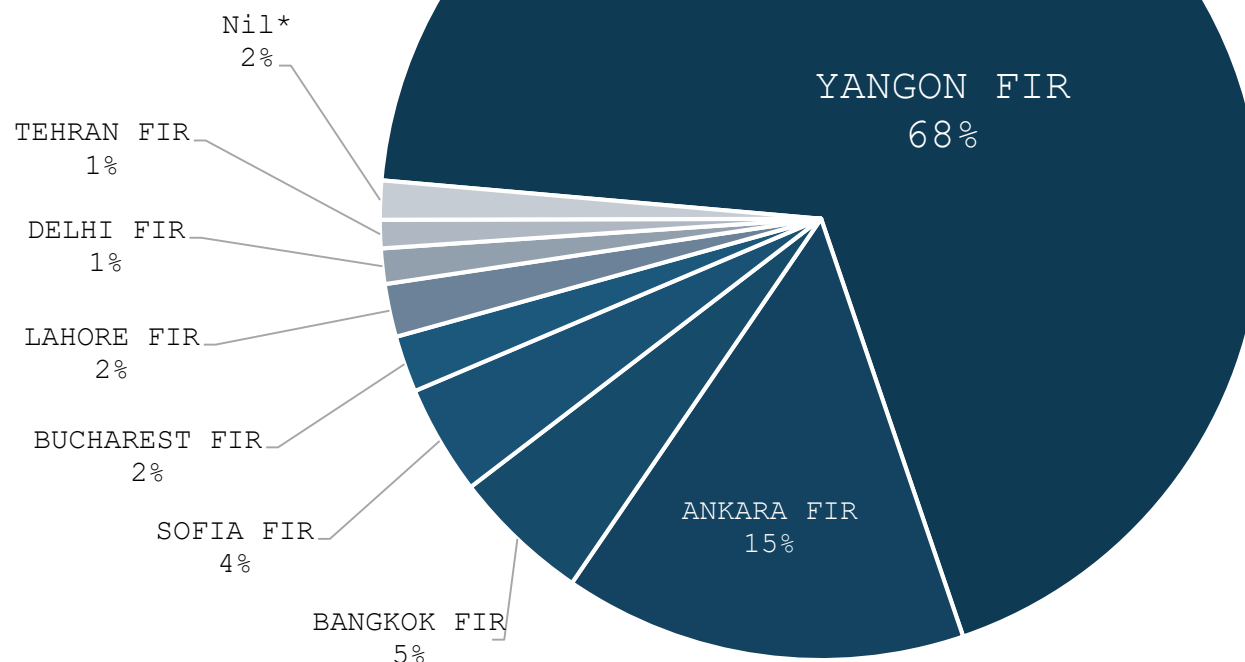
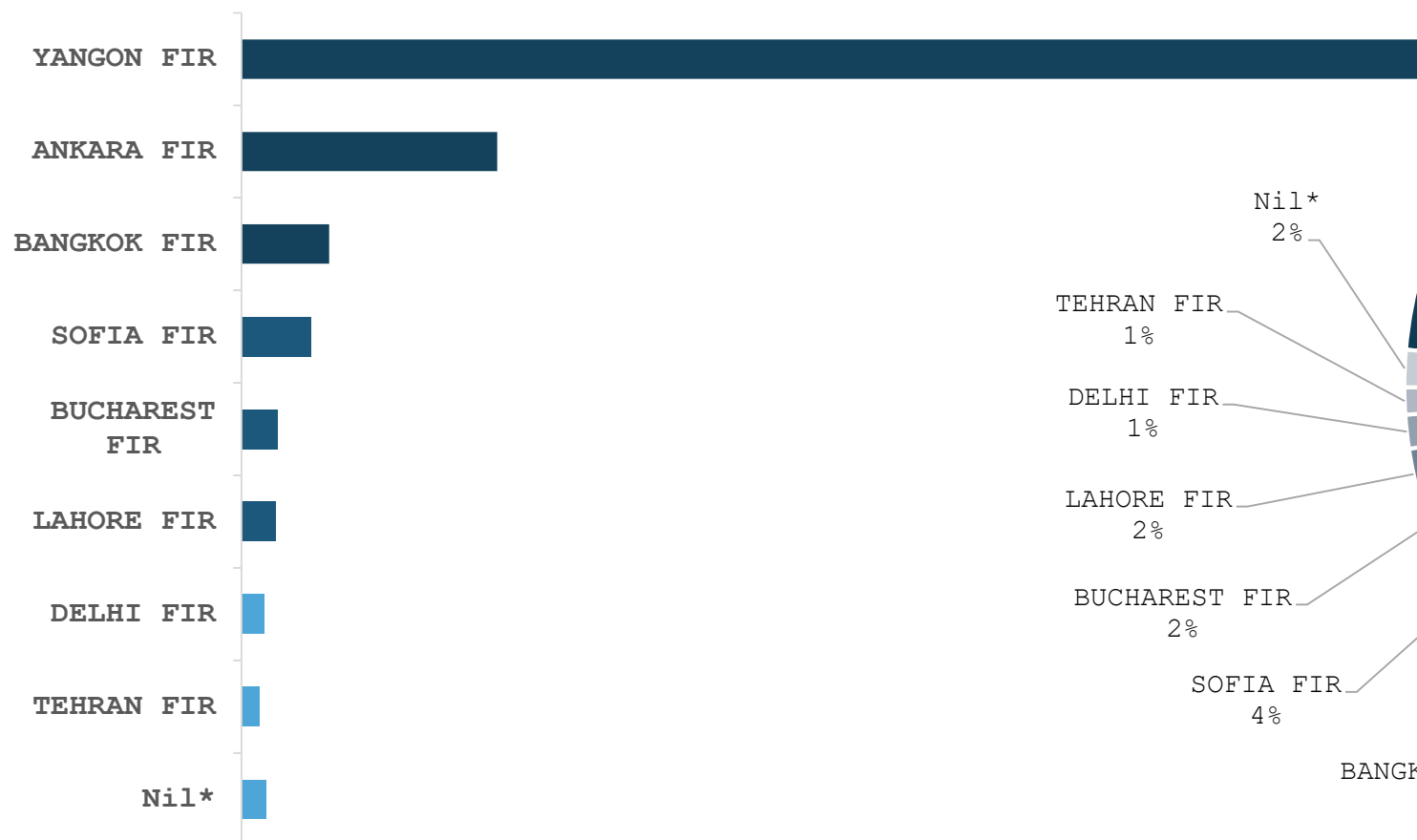
# GPS Lost and Spoofing

2024 - 2025 Statistics Report



# GPS Lost and Spoofing

2024 - 2025 Statistics Report



Nil\* : FIR which have event occurred less than 5 times ; DHAKA, TBILISI, KABUL

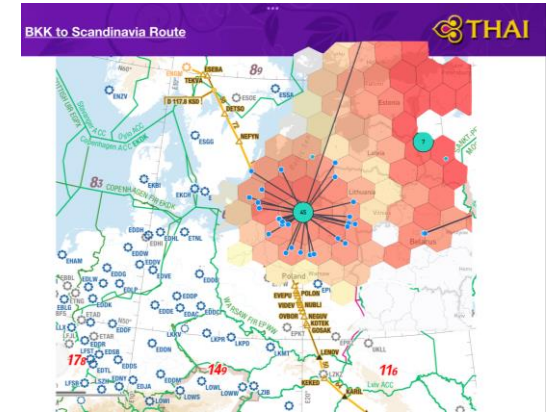
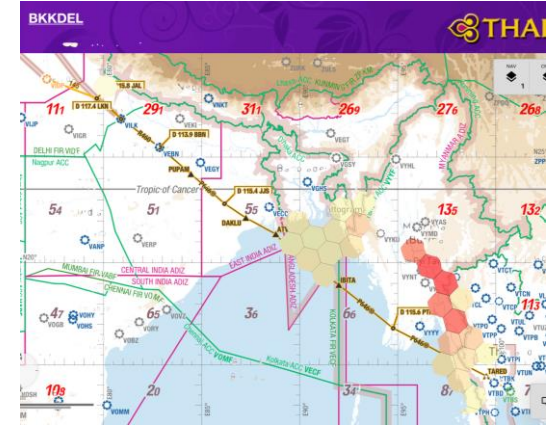
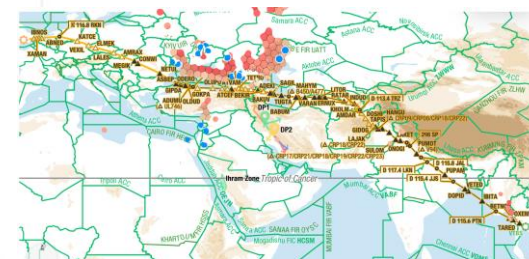
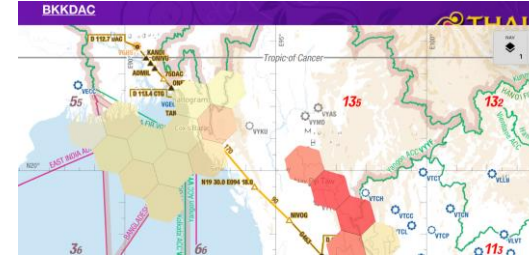
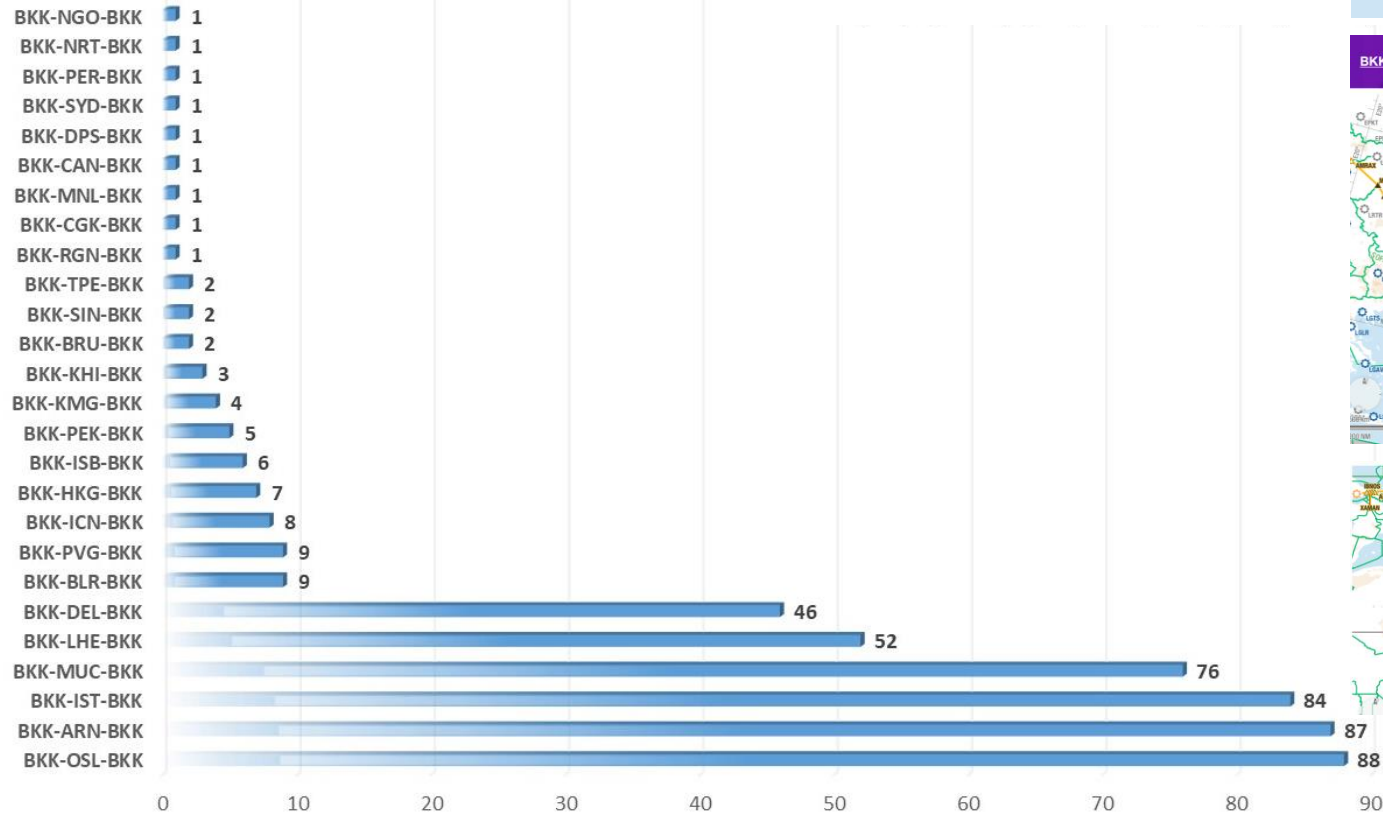


# GPS Lost and Spoofing

## 2024 – 2025 Statistics Report

### GPS DISCREPANCY 2025 (A350)

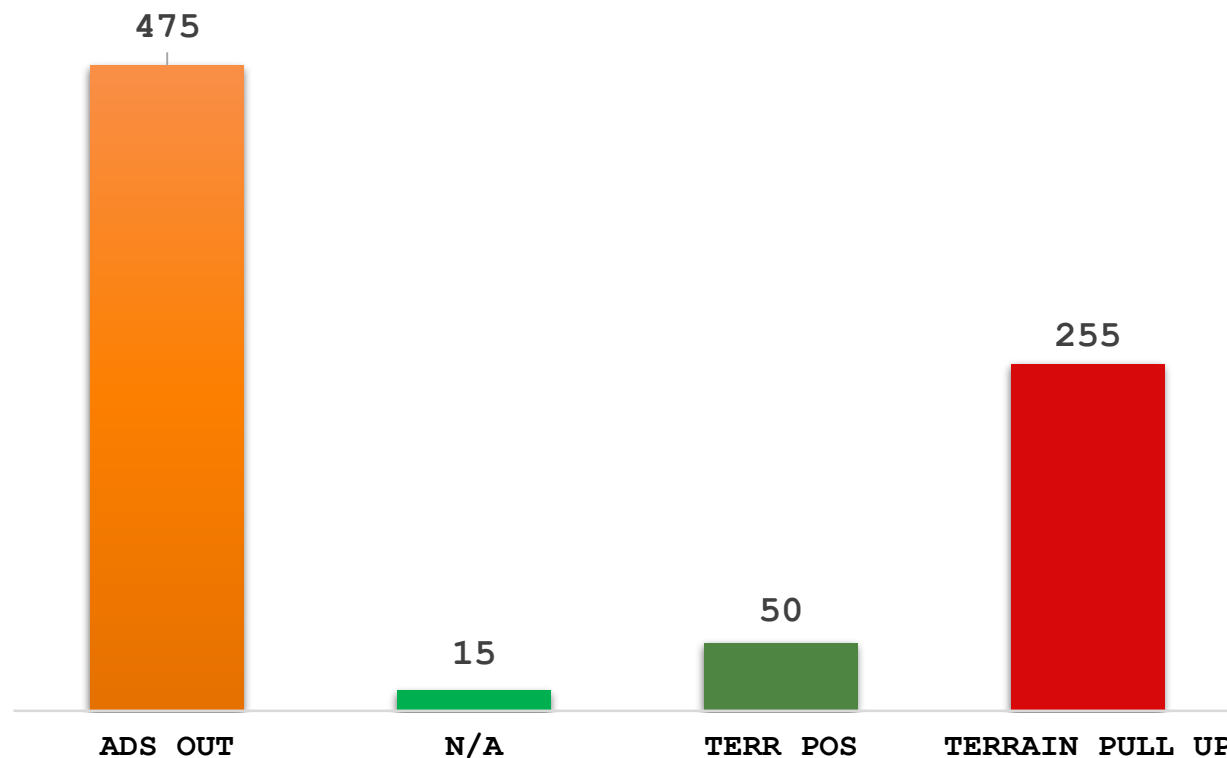
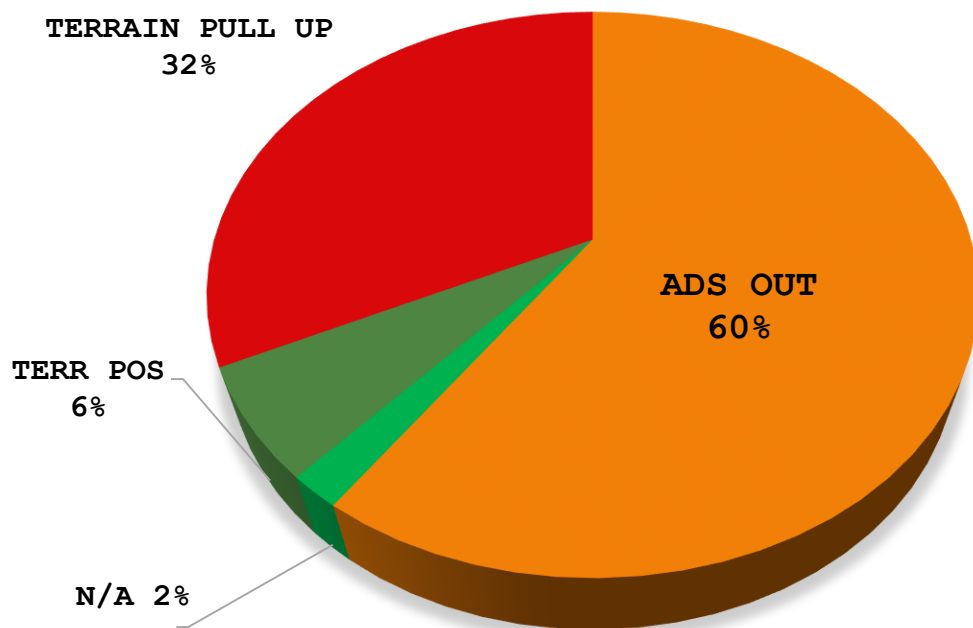
GPS Spoofing: 499 flights from 2,793 flights (17.87%)



# GPS Lost and Spoofing

2024 - 2025 Statistics Report

## EFFECTED EVENTS



N/A: Time Error, ADS-B IN, CPDLC

# GPS Lost and Spoofing

2024 – 2025 Statistics Report

## A320/330/350 GPS EFFECTED

### MS EFFECTED

#### NAV

GPS PRIMARY LOST/NAV PRIMARY LOST  
NAV FM/GPS POS DISAGREE

#### SURV

UNDUE TAWS ALERTS  
TERR DISPLAY ON ND  
ERRONEOUS POSITION TRANSMITTED VIA ADS-B  
LOSS OF TCAS AND PWS  
LOSS OF TAWS

#### INCONSISTENT GNSS TIME

INCONSISTENT A/S TIME  
CPDLC AND ADS-C CAPABILITY LOSS  
INCONSISTENT TIME IN FMS PREDICTIONS





# Strategies and Best Practices for Flight Crew Mitigation Cockpit Preparation

- Check Technical Logbook for the previous flight  
"AIRCRAFT HAS FLOWN THROUGH GPS JAMMING OR SPOOFING AREA"
- Perform a full IRS alignment if expects to fly in  
airspace with low radio NAVAID coverage.

# Strategies and Best Practices for Flight Crew Mitigation

## Before Entering the Known or Suspected Radio Interference Area

- Clock, Personal Watch, FMC ETA, and Fuel: Noted and monitored.
- Periodically verify position with conventional NAVAIDs before entering and within the interference area.
- GPS updating in the FMC should be temporarily disabled.

## Inside the known or suspected Radio Interference Area

- Flight crew keep observing symptoms according to "Flight Deck Effect" list

# Strategies and Best Practices for Flight Crew Mitigation

## When exit the known or suspected Radio Interference Area

- Enable the GPS updating in the FMC
- Verify the GPS data has been recovered.

## After landing

- Entry in the technical logbook.  
"AIRCRAFT HAS FLOWN THROUGH GPS JAMMING OR SPOOFING AREA"
- Submit a report.