

# Duty risk metric

## Overview

FRMSc has developed a Duty Risk metric to resolve the difficulties in identifying the likelihood of a reportable incident occurring due to fatigue in aircrew.

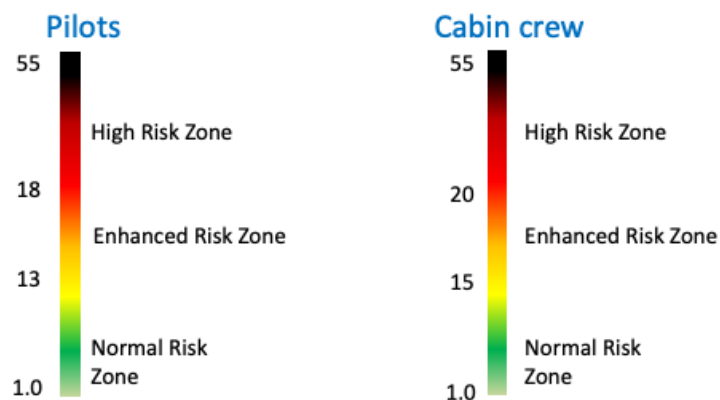
This metric identifies duties that present a higher risk but are not easily identifiable by fatigue alone, e.g. consecutive early morning starts.

It has been designed as a relative risk metric, serving as a single composite metric that considers the physiological response of the aircrew to fatigue levels they experience when performing their duties. It also considers the likely risk to operations and risk of a reportable incident at any given point from the nature of the task undertaken by the aircrew, e.g. taking off or landing an aircraft, and the corresponding fatigue score.

The duty risk metric compares the relative risk of any duty with that to a baseline 'standard duty.' A standard duty is considered to be a shift for two pilots who are acclimatised to their time zone, starting at 10:00 AM and ending at 8:00 PM, with two flight sectors. This standard duty is given a risk score of 1. All other duties are evaluated against this standard to determine their risk score. For example, a duty that is overnight might be assessed as 15 times riskier than the standard, so it would have a duty risk score of 15.

Like the other scales supported by FRMSc, each operation will determine its specific duty risk threshold. Our recommendation is for pilots, to consider 1 to 13 being generally acceptable risk, 13-18 being heightened but still acceptable risk with caution, and 18+ being high risk for pilots that should be avoided. For cabin crew, we would suggest 1-15 being acceptable risk, 15 to 20 being heightened but still acceptable risk, with caution.

## Recommended thresholds for the Duty Risk Metric



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If possible, duties with a risk score over 18 for pilots, and over 20 for cabin crew should be avoided. A typical high-risk duty would involve a fully rested pilot in their home time zone flying a four-sector duty from 8 PM to 6 AM.

### The Reference Score

The reference fatigue risk score of 1.0 relates to a 2-sector duty with 2 acclimatised pilots operating from 10 AM until 8 PM local time.

The metric will read zero if the aircrew is stationary or involved with duties that contain no flights, but it will read high, for example, if the pilots are landing when the fatigue levels are high.

Similarly, during the cruise phase, the risks of a reportable incident for pilots will be reduced, reducing the risk score. It means that even if the fatigue levels are relatively high, the overall risk is relatively low during the cruise phase compared with the landing phase. But, if a pilot has flown multiple sectors and landed numerous times, they will also have a higher risk score than an equivalent pilot flying a single-sector duty.

The reportable incidents are different for pilots and cabin crew. For cabin crew, the cruise phase is difficult as unruly passengers and maleficent actors may choose that phase of the flight to create a nuisance, increasing cabin crew's risk score. However, the risk score is usually lower for them during take-off and landing unless circumstances cause a difficult take-off or landing.

Pilots have fewer reportable incidents, but those may have a high impact. Cabin crew may have more reportable incidents, but from a safety perspective, the impacts of these incidents

on the risk score are likely to be lower than those experienced by pilots. The cabin crew incidents might lower the passenger satisfaction, which is crucial for the marketing department that aims to maintain both passenger safety and loyalty.

Finally, it must be reiterated that the FRMSc Duty Risk Metric is a tool to assist airline fatigue risk managers in reducing the risks from fatigue during operations by having a single metric to alert them of a duty with possible higher risk than is acceptable to their company. It is always necessary to also ensure that no duty contains fatigue levels more than those set by the airline FSAG or Safety department.

The FRMSc training programmes cover managing risk, setting threshold levels and use of this risk metric to detect counter-intuitive fatigue threats.