Naval Safety Command

Advanced Modeling - Aviation

How the Model Works

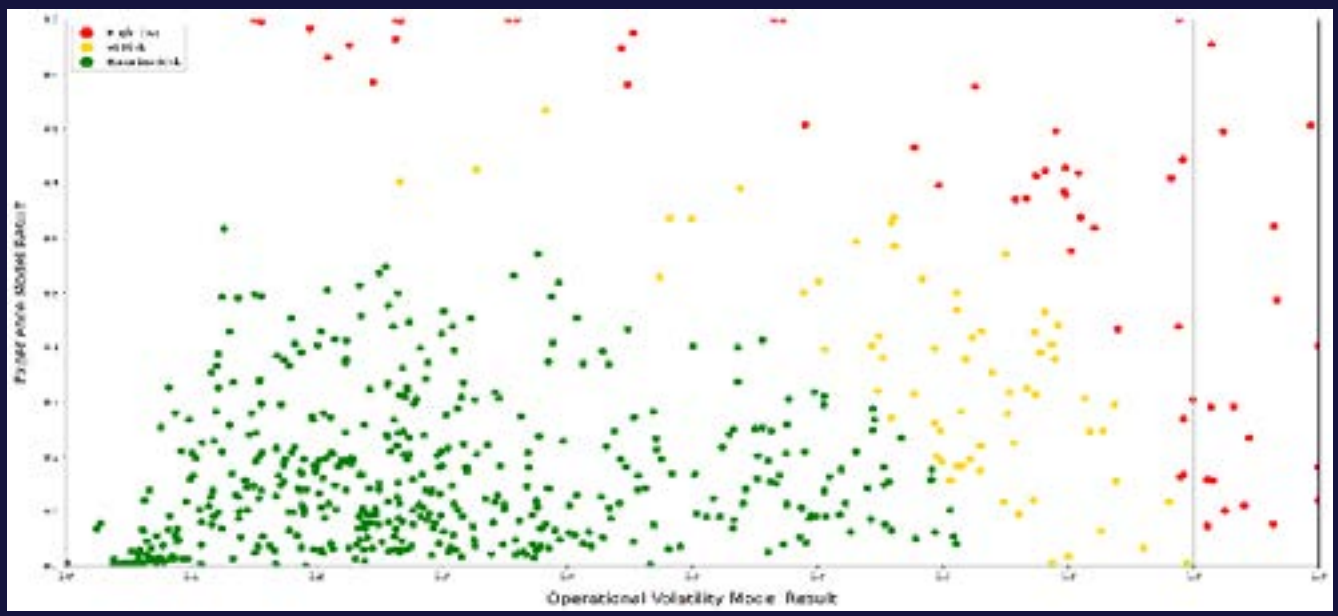
The Aviation model has been developed using the Defense Manpower Data Center (DMDC) manpower data, Decision Knowledge Programming for Logistics Analysis and Technical Evaluation (DECKPLATE) flight hour information, Optimized Fleet Response Plan (OFRP) data and Risk Management Information (RMI) safety related data.

From that data, the model creates a visual representation in the form of a cartesian (X-Y axial) graphical display. The X-axis is referred to as the Operational Volatility axis. It is a summation of the unit OPTEMPO (% of days a squadron has logged flight hours and the number of flights per month), the DIFFERENTIAL OPTEMPO (month-to-month delta), and CREW VOLATILITY (% of personnel who have rotated in/out of squadron per month over a 12-month period). The Y-axis is the Experience axis and focuses on the total number of days service members based on their binning have been assigned to an operational squadron. The bins for the y-axis are CO/XO, DH's, Wardroom (O1-O4 Aviators) Ground Officers (MMCO, MCO, CWO), Senior Enlisted (E8/E9), the Chief's Mess, Senior Enlisted (E6), Junior Enlisted (E1-E5).

What the Model Gives You

Using RMI data from 2017 to current and focusing on Class A and B Flight Mishaps and Class A-C Aviation Ground Mishaps and AGM Crunch (Shore) , each mishap unit will display a current posture using those aforementioned characteristics. Based on that information, the model will look at each squadron using the same characteristics and then determine if squadron X is either at a baseline risk (low-risk), at-risk, or at high-risk. In other words, the model is stating that squadron X is either exhibiting no similarities to past mishap units (baseline risk), some similarities (at-risk) or many similarities (high-risk).

On the display, you will see a green dot which correlates to low-risk, a yellow dot which is for at-risk units and then a red for high-risk squadrons. Each squadron will have one dot assigned to it for that month. (The lower left-hand corner – the 0-0 origin is the lowest risk with the upper right-hand corner being the highest risk.) The model does not predict or forecase that a unit will have a mishap. Rather, the model is showing that ship X has the characteristics of a mishap unit. In other words – it is a unit's "check engine" light – a warning to look further into a unit.



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Each month a brief is created highlighting ships attached to USFF or CPF, which looks at Collisions, Allisions and Groundings for one graphical display, followed by a second graphical display focused on engineering and maintenance-related mishaps. The brief will display three graphs per category for the current month and previous two months allowing the user to follow trends from month to month. The model also breaks out in detail what is driving a unit to be at risk or high risk and provides those details for leadership to review and consider.

How to Use It

The model indicates how closely current unit level conditions resemble units that have had mishaps in the past. If you find the model agrees with what you *are* tracking, it is an independent verification of what you have already determined. If you find the model indicates a unit you are *not* tracking, you may want to consider taking a closer look at the identified unit. OPTEMPO is normally driven by commitments and is normally not able to be greatly adjusted – other mitigations to consider include closer oversight, personnel rotation schedules, or more frequent checks.

Additionally, an active (near-real-time) dashboard is active and is fully selectable (filterable) based on several options and is accessible by anyone that has an active Common Access Card (CAC). Visit our Dashboard webpage using the QR code on the right or by visiting https://navalsafetycommand.navy.mil/On-Duty/Data-and-Analytics/Dashboards/.

If you have any additional questions, please reach out to Mr. David “Jane” Mundy, Director, Data and Analytics, Naval Safety Command at david.t.mundy.civ@us.navy.mil or Mr. Gregg Weber, Division Head, Data Modeling Division, Naval Safety Command at gregg.weber.civ@us.navy.mil.

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