**Introduction**

Illuminations of aircrafts by lasers, referred to as “laser strikes” in this study, has characteristics that threatens the safety of the aviation industry (FAA, 2013). The ever-growing number of such occurrences has gathered increasing concern of the aviation industry in recent years. This study investigated the UK’s Military Aviation Authority (MAA) data between 2009 and 2015 with the aim to assess how different characteristics of a laser strike event may affect safety performance of an aircraft by evaluating the quality of data provided and subsequently develop mitigation measures to reduce laser associated risks with respect to military operations in the UK. Recommendations were made to improve safety performance of aviation industry by comparing the results of analysis, data quality and reporting scheme of the UK MAA dataset to research findings conducted on a commercial aviation dataset.

**Methodology**

A methodology developed by Dupuy (2012) is used to assess the suitability of the data for meaningful statistical analysis. Two main components were identified in this methodology: sources of poor data quality and data quality criteria.

**Descriptive analysis**

Variable tested | Data processing based on UK MAA | Data processing based on UK CAA | Dataset completeness | Database structure | Consistency | Relevance | Accessibility | Wald Chi-Square | df | Sig. | Lower confidence interval | Upper confidence interval | Asymptotic significance level |
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<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>12.046</td>
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<td>0</td>
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<tr>
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<td>No</td>
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<td>Yes</td>
<td>No</td>
<td>Yes</td>
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<td>1</td>
<td>0.000</td>
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<td>1.343</td>
<td>2</td>
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<td>0.134</td>
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**Statistical analysis**

Chi-square test:

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<th>Variable 1</th>
<th>Variable 2</th>
<th>χ² value</th>
<th>df</th>
<th>p</th>
<th>% of cells with expected frequency of less than 5</th>
<th>O/E (High/Medium + Low)</th>
<th>O/E (Low/Medium + Low)</th>
<th>O/E (High/Low)</th>
<th>O/E (Low/Low)</th>
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<td>Occurrence Type</td>
<td>Time of Day</td>
<td>90.232</td>
<td>9</td>
<td>0.000</td>
<td>11</td>
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</tr>
</tbody>
</table>

**Ordinal logistic regression test:**

Threshold P (< High/Medium): 0.025
Threshold P (< Low/Medium + Low): 0.000

**Comparison with civil aviation data:**

**Recommendation:**

1. Improve data capturing by mandating variables such as location of occurrence, phase of flight and colour of illuminating beam;
2. Provide clear guidelines to occurrence reporters (e.g. definition of perceived severity has to adhere to a guideline);
3. Promote stricter requirements on occurrence reports to be received; updated versions that adheres to stricter standards to be resubmitted if initial report did not meet requirement;
4. Introduce automated data collection method for input of objective information;
5. Establish surveillance measures in areas underlying flight paths.

**References**