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Situational Awareness of Pilots in the Cruise

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Abstract

Situational Awareness is a corner stone of flight safety; a flight crew or single pilot must be situationally aware to allow the flight to operate without incident and to detect any failure or faults as soon as practically possible. This gives pilots the greatest length of time to respond and then either resolve the issue, or minimize escalation. This research explores whether the implementation of a checklist is beneficial during a portion of the flight when there is low outside stimulation for the pilot. The research takes a practical approach, attempting to find not just an effect but a meaningful effect that could potentially improve safety in a real-world scenario. In accordance with this, Fisher’s significance testing is used, and while the results are statistically interpreted using this method, Bayes factors are also used in an attempt to provide a more relevant answer to the research’s endeavor to find a way to meaningfully increase flight safety.
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Chapter 1

Introduction

1.1 Introduction

Situational Awareness (SA) in the cockpit is a vital part of flight safety and efficiency. The Situational Awareness exhibited by the flight crew of an aircraft works to keep the aircraft flying in the most efficient way possible, keeping the aircraft on track and ensuring that all procedures are taken into account and future events are planned for. This efficiency allows the aircraft to be operating for the most profit, or minimalized cost, in a commercial situation. This Situational Awareness also extends to the safety of the aircraft. The ability to identify failures and changes from the expected while in flight is a large part of its safe operation, allowing more time to react to a situation and more time for the crew in a high workload situation. Situational Awareness is important to aviation and therefore increasing it would be valuable.

The research was based on the idea of increasing the Situational Awareness in the cockpit. It used a newly designed checklist to increase a pilot’s SA, compared to pilots not using the checklist. This paper will also review Situational Awareness itself, and break it into its various components to define it and identify areas that can be improved in flight. The checklist will be designed to increase SA in those identifiable areas.

A cost-effective way to conduct the experiment was developed, taking into account the portability required that would allow for the application of the experiment to be transported around the upper and mid North Island of New Zealand, to reach flight schools in those areas.
Also taken into account was the practicality of allowing for minimal cost to simulate an inflight situation.

The overall research hypothesis is that the checklist has a positive result on the Situational Awareness of pilots.