

Aviation-Related Incidents: Psychological Effects to The Current and Future Student Pilots

Ken Reave Lowell R. Helit¹, Ryan Angelo B. Dela Cruz¹, Miguel Jericho Y. Divina¹, Gene Eduard A. Ducoy¹, Wreinner C. Escudero¹, Matt Andrei G. Genetia¹, John Philip Q. Obmasca¹, France Patrick S. Sumadsad¹, Marianne Shalimar G. Del Rosario²

¹Student, Bachelor of Science in Air Transportation Department, PATTS College of Aeronautics Lombos Avenue, Brgy. San Isidro, Parañaque City, Philippines

²Professor, Bachelor of Science in Air Transportation Department, PATTS College of Aeronautics Lombos Avenue, Brgy. San Isidro, Parañaque City, Philippines

Corresponding Author: kenhelit11@gmail.com

Abstract— This study aimed to identify and examine the psychological effects of the number of aviation-related incidents for current and future student pilots. This study includes specific problems regarding the level of knowledge on aviation-related incidents in the last decade and its most common type, the expected behaviors by the student pilots with knowledge of these incidents, the significant relationship of the behaviors and the aviation-related incidents, the significant differences among the respondents' profile when grouped by age and their college course. Lastly, the reasons for the respondents' differences when grouped by their profiles. This study used a mixed-method approach which combines both quantitative and qualitative methods. The quantitative approach used in this study aimed to investigate and determine the psychological effects on student pilots by using survey questionnaires to gather and collect data. For the qualitative approach, an interview was conducted in this study to measure the student pilot's insights about aviation-related incidents. The results showed consistent indications of differences in the level of knowledge among respondents and their exhibited behaviors when grouped according to the profiles, especially if grouped by age. In conclusion, the aviation industry is still as safe as it could be, showing no room for mistakes even if student pilots are faced with a lot of work-related stressors, their behavior does not affect the number of local aviation-related incidents. The researchers recommend a change in curricula for student pilots and create more specialized training to enhance knowledge of the different types of aviation-related incidents and to continue the overall safety of the aviation industry.

Index Terms—Aviation, Accidents, Incidents, Psychological Effect, Student Pilots.

1. Introduction

Aviation-related incidents occur during flight operations and can happen even when anyone boards a plane.

Manuscript revised May 15, 2024; accepted May 16, 2024. Date of publication May 18, 2024.
This paper available online at www.ijprse.com
ISSN (Online): 2582-7898; SJIF: 5.59

These accidents are caused by many factors such as weather, bird strikes, or even human error. Witnessing these types of incidents can have a traumatic effect on people who were there to see it happen, or have heard it on the news. These questions explore recent airplane incidents and their potential links to mental well-being. It is crucial to consider the relationships between accidents, elements like weather and human actions, and their potential effect on mental health. Understanding these connections aids in evaluating their potential impact on mental well-being. The purpose of this thesis is to dive into the deep consequences of these occurrences, namely their capacity to change the mental and emotional states of aviation professionals. By solving the complex interactions between accidents, surrounding factors like weather conditions and human decisions, and their potential influence on mental health. This study aims to shed light on the often-overlooked psychological dimensions of aviation safety. Understanding these relationships allows a better understanding of the larger implications of the pilots' mental well-being. Having a deeper understanding of the emotional and mental aspects of the crew can greatly improve the service allocated for the convenience of all aviation personnel. It will build a much more promising environment for the people in which they will be able to do their jobs accordingly without the risk of their emotions getting in the way. Being a professional is a great responsibility, especially in the aviation industry where safety is of utmost importance.

Studies highlight that Inflight loss of control (LOC-I) is a major contributor to General Aviation (GA) fixed-wing aircraft accidents. The US National Transportation Safety Board's database is a valuable resource for accident data, but its traditional analyses provide limited insights into LOC-I. (Majumdar et. al., 2021). Another study, quantitatively analyzing aviation accident databases, examined aircraft accidents in South Sudan. It assessed accident numbers, aircraft manufacturers, models, fatalities, and causes categorized as

pilot error, technical failure, air traffic control issues, or weather-related events (Deng Ayiei, 2021). In the other study, using data from the National Transportation Safety Board (NTSB), the study examined fatal accidents involving medical mission helicopters and airplanes that occurred between 2000 and 2020. 239 fatalities were reported from 87 occurrences, mostly involving helicopters 72.4% and 27.6% for airplanes, after likely causes, accident dates, and aircraft models were examined. The NTSB determined that pilot errors, disorientation, performance deterioration, fatigue, and maintenance concerns accounted for 87.4% of fatalities (Shekhar, A. C., et Al. 2023). In addition, 27 cases from the Civil Aviation Administration of China were examined using the HFACS and fsQCA techniques, revealing complex accident causes. The results highlight the continued importance of pilot mistakes as a contributing factor while emphasizing the value of suitable weather, terrain, and efficient organizational management in lowering accident mortality (Zhou, 2022; C.S, 2022). Accidents still happen in aviation despite progress because of human error, defective equipment, and oddities. The predominant cause of large collisions was shown to be structural breakdowns, particularly engine-related issues after 111 crash reports from 2000 to 2020 were analyzed. Over 1900 incidents have occurred globally in the previous 50 years, highlighting the continuous difficulty of aviation safety. (Kane et. al., 2021).

Airline pilots who choose to work long work hours would have an unfavorable effect on their mental health issues that affect their overall performance in flight. Effects like fatigue and lack of sleep can be a threat to the safety of the flight (O'Hagan et.al, 2017). Over the years, a total of 576 casualties relating to aviation have been caused by pilots who have mental diseases, their mental health is influenced by their negative life events. Prioritizing mental support and well-being will help pilots utilize better decision-making and a healthier work environment (Mulder & de Rooy, 2018). Working long hours in the aviation field will surely take a toll on the well-being of the employees because humans also have limitations. It may affect the quality of performance to such an extent that safety might be compromised. Having a cool and calm emotion is a must to ensure the safety of the people involved in the airline operation and transportation. Pilots having emotional turmoil are prone to mistakes and such that may lead to a domino effect or cascade of events that can affect everyone on board. To rectify such instances, analysis and study are made to know what factors are to be considered in considering how one person is emotionally and psychologically competent enough to perform the task at hand effectively and efficiently. This would be very beneficial for student pilot license holders in a way that accidents and mistakes will be mitigated and avoided to ensure a safe and productive flight. (Wang & Zang, 2020; Yakovytsk, 2022).

Airline pilots are required to perform safety in their duties, this aligns with their behavior and emotions on how they can perform safety compliance tasks. If pilots are trained enough to

execute safety in flight, it is assumed that that training is in preparation for high-risk situations. Pilots receiving inadequate safety training does not mean that they cannot ensure safety. Despite receiving inadequate training, the pilot's behavior and emotion can trigger their safety-related cognitions, this is attributed to the pilot's situational awareness skills to coordinate their responses to perform safely (Wang et al., 2021)

Studies have shown that one of the most prominent causes of general aviation incidents/accidents in the United States was caused by weather-related conditions wherein the aircraft mostly lost its control due to the effects of the weather condition it was flying in (Fultz & Ashley, 2016; Long, 2022). Moreover, another great contributing factor to aviation incidents is the Human Factor side of the operation wherein lack of situational awareness is the leading Human Factor that generated a lot of commercial air transport incidents/accidents over 16 years, while during flight training, the primary Human Factor that was found was more of a skill-based error due to the lack of experience and knowledge of the pilots. Both student and commercial pilots also tend to not follow general procedures which was the second leading Human Factor (Kharoufah, et al., 2018; KILIÇ, 2019). Lastly, poor maintenance of the aircraft is another factor that resulted in aviation incidents/accidents because of the complacency of most aircraft mechanics and engineers who were supposed to maintain the airworthiness status of these aircraft, these resulted in increased aviation accidents because of the components being fatigued. Its continuous use over the years which was badly overlooked by the aircraft mechanics and engineers in the field resulted in these incidents (Insley & Turkoglu, 2020; Wild, et al., 2021).

A pilot's behavior changes after they have witnessed an aviation-related accident. One of these is the taking of one's own life because, after 9/11, pilots have committed aircraft-assisted suicides due to witnessing or even being informed about it. This behavior is known as the "copycat effect", a suicidal behavior that stems from what a person has been shown in the media. It has been shown that the risk ratio of the first year after 9/11 is higher than its two succeeding years, and the year of the accident (Vuorio et al., 2018). Another behavioral change studied is emotional dysregulation, which decreases a pilot's overall flight performance and increases their risk-taking actions. Pilots found emotions shift after viewing accident and incident images, impacting their situational awareness. They observed 45 jet pilots, splitting them into three groups. Each group saw varied pictures— accidents, incidents, or neutral— assessing their effect on awareness. (Luciani et al., 2022; Tianjiao et al., 2023). Furthermore, researchers checked U.S. plane crashes (2000- 2015) in the NTSB database. Eight pilots with PTSD died in 0.16% of 4,862 fatal accidents. Authorities suggest assessing pilots with prior PTSD. More data after trauma could reveal the impact. Investigators must recognize the trauma's role in aviation accidents (Laukkala et al., 2018). Lastly, the study explored the pilots' stress reactions after flight accidents. They looked at 82 pilots' psychological stress after two accidents. The goal was to link pilots' control beliefs to

emotional responses (Dong et al., 2016).

For a pilot to operate a successful flight, pilots have to maintain mental composure to conduct the flight itself. Flight controls, navigation, and radio communication are the things that pilots have in their workload. Flights typically last for hours and their workload would be much tougher than usual. Mental strength is a skill that pilots have to master because multitasking while ensuring the safety of the flight is a must. There are many cases of aircraft-related incidents that stem from the mental health of the pilot. One of them is working for longer hours which would lead to lack of sleep and would result in fatigue. Fatigued pilots who conduct a flight compromise the safety of the passengers, the worst-case scenario is that pilots will lose control of the aircraft and end up in a disaster. After the 9/11 incident, other aircraft-related incidents were made by pilots themselves because of their suicidal thoughts, it is called the copycat effect wherein they were given an idea to simulate what they saw in various instances like media. When pilots are informed about aviation accidents and incidents, their emotional shifts affect their situational awareness. US plane crashes dated from 2000 to 2015 state that 8 pilots with PTSD are the root of the incident. Assessing a pilot's mental health would aid in further stopping mental-related issues. They should be open to stating their mental health without the risk of losing their job. Mental health screening is a way of assessing the pilot because they conduct a flight, it would be very helpful to them to not force themselves to work with mental issues, fatigue, and other negative live events. Pilots have a negative response to the aircraft incident which would impact their emotional well-being and can be the cause of trauma that might result from an aircraft-related incident if they are not being overlooked. Screening their mental state and providing mental support for pilots will provide positive working conditions since pilots are aware of the many different aircraft-related incidents that cause them PTSDs. The highlighted research addresses the substantial position of inflight loss of management (LOC-I) in widespread aviation (GA) constant-wing plane injuries. Even though current coincidence databases like the US Countrywide Transportation Protection Board offer precious information, conventional analyses fall short of understanding LOC-I. Those studies go through aviation accidents in numerous contexts. One examines South Sudan, studying accident metrics, plane details, fatalities, and causes. Every other examination investigates deadly injuries related to medical task planes within the US between 2000 and 2020. Pilot mistakes, disorientation, fatigue, and maintenance issues were key factors in fatalities. It resulted in 87 accidents, mostly helicopters with 72.4% and airplanes with 27.6%. In an analysis of Chinese aviation accidents, the use of specialized strategies revealed problematic causes. The findings underscore the persisting significance of pilot mistakes and strain the significance of appropriate conditions and organizational control. Structural breakdowns, specifically engine-associated issues, emerged as the primary reason for most collisions. Despite progress, aviation protection remains challenged by

human error, gadget problems, and surprising events, as is evident from an evaluation of 1900 accident reviews over the past 50 years.

General aviation incidents and accidents in the United States represent a significant concern for the aviation industry and safety regulators. This synthesis explores the multifaceted causes of these incidents, drawing from various studies conducted in recent years. The research highlights the critical role of weather-related conditions, human factors, and aircraft maintenance lapses in contributing to general aviation incidents and accidents. In Weather-Related Conditions, it underscores the profound impact of weather-related conditions on general aviation incidents and accidents in the United States. Weather conditions, such as turbulence, thunderstorms, icing, and low visibility, significantly challenge aircraft control. The human element in aviation operations plays a pivotal role in the occurrence of incidents and accidents. The lack of situational awareness is a predominant human factor contributing to commercial air transport incidents. Over 16 years, this factor has consistently been a leading cause of accidents in this sector. Furthermore, in flight training, the primary human factor is skill-based errors, often linked to pilot inexperience and insufficient knowledge. The reliability and airworthiness of aircraft are contingent upon effective maintenance. However, the alarming issue of poor maintenance practices by aircraft mechanics and engineers sometimes makes them complacent, neglecting the critical task of ensuring the airworthiness of aircraft components. This negligence can lead to component fatigue and failure, a major contributor to aviation incidents and accidents. Maintenance professionals must prioritize rigorous and thorough maintenance routines to prevent such lapses. Weather-related conditions, human factors, and aircraft maintenance issues collectively contribute to these safety concerns. To improve aviation safety, stakeholders must address these factors through enhanced pilot training, weather monitoring, and stringent aircraft maintenance practices.

A. Background of the Study

Aviation safety is the number one priority of the aviation industry. Knowing the number of aviation incidents in flying schools in the Philippines can help ease the minds of the student pilots. The researchers gathered participants who held Student Pilot Licenses from an aviation school known for its top-notch training programs for those aspiring to become pilots and aircraft technicians. Flying School A was established in 2007 by five alumni of another flying school. With their passion for flying and their experience, they came together and pursued their dream of an aviation school that would produce world-class pilots. This school is dedicated to delivering training that upholds the highest standards of technical expertise, professionalism, and compliance with global safety standards. This school also trains its students to become competent, dedicated, and professional to prepare for their careers in the aviation industry. The school only incurred 3 accidents since the start of its operations with 1 incident and no serious

incidents since its establishment.

Flying School B was established in 2006 as a Group, which is an OEM independent company that leverages its global network of expertise and resources to deliver high-quality pilot training solutions for the domestic and Asia-Pacific markets. Since they started service, they have had 4 accidents in their operations, 2 incidents, and 1 serious incident. Flying School C was established in 2001 by a group of young, forward-thinking pilots who saw a growing need for reasonably priced, high-quality aviation training. Since that time, Flying School B had only 2 accidents, 1 incident, and no serious incidents. Flying School D was established in 2017 and formed by an airport operations company. Since its operation, there have been 2 aircraft-related reports. One incident was during the landing phase and another was an accident by a student pilot failure. Established in 1992, Flying School E aimed to offer outstanding global training to pilots and maintenance workers, seeking to gain recognition as a preferred institution known for excellent aviation courses. Despite its lengthy history, the school has operated extensively, encountering merely 4 accidents, 2 incidents, and just one notable event. Flying School E is a respected flying school that was suspended indefinitely by the CAAP due to the recent accident involving a Cessna 152 with the 2 occupants dead on the site of the crash. Flying School F is a prestigious institution that is at the cutting edge of aviation education and training. Their operations began in 1993 and have continued to this day. This school had a total of 8 combined accidents and incidents. This school has established itself as a prominent player in aviation education due to its commitment to excellence and ambition to produce future aviation professionals.

B. Theoretical Framework

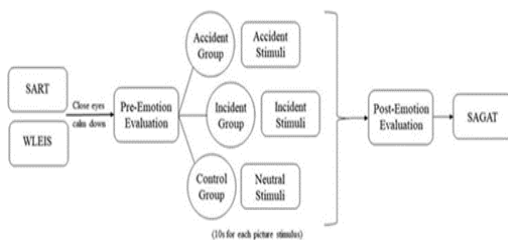


Fig.1. The Influence of Emotion Induced by Accidents and Incidents on Pilots' Situation Awareness Procedure diagram

Aviation incidents and accidents can never truly be prevented 100 percent, but they can always be mitigated and reduced to ensure the safe travels of passengers. Several factors affect the number of occurrences of these incidents and accidents. One great influencer of these incidents and accidents is the emotional state of the pilots which then affects the pilots' physical health, mental health, and cognitive abilities. This sudden shift in the pilot's wellbeing can dramatically affect their performance in doing their job which may or may not lead to an aviation incident or accident. Before the trial, all three groups of individuals first completed the Situational Awareness

Rating Technique (SART) and Wong and Law Emotional Intelligence Scale (WLEIS). The pilots were told to close their eyes and take a quick break to gather themselves.

The pilots were then instructed to evaluate their current mental state subjectively. Three groups of participants were created: the accident group, the incident group, and the control group (which was exposed to neutral stimuli). They were presented with relevant image stimuli. E-prime software was used to control the emotional stimulation activity, and each image was shown for 10 seconds. After the emotional stimulation phase, the pilots again assessed their current emotional state from a subjective perspective. The pilots took part in the Situation Awareness Global Assessment Technique (SAGAT) test right after this evaluation. Accidents and incidents, ranging from minor mishaps to catastrophic disasters, serve as potent emotional induction conditions, meticulously scrutinized to compare pilots' emotional responses. The intertwining factors of physical and mental health, intrinsic to a pilot's well-being, persistently cast their formidable shadow. A myriad of diverse emotions, encompassing fear, confidence, anxiety, and exhilaration, are experienced by aviators, contingent upon distinct induction conditions and the spectrum of their emotional intelligence. These variables, often unnoticed, continue to wield a significant influence when pilots confront or possess knowledge of previous incidents and accidents in the realm of aviation.

If such emotional assessment is done to the pilots, they may further understand their own emotions which is crucial to the mental management of their job which is operating a flight. These assessments can identify if a pilot is fit for flight in terms of mental health. Evaluating a pilot's mental state may reduce the chances of operating a flight with their emotions, PTSDs, and fatigue thus leading to a healthy work environment. If the pilot's mental health is supported by the airline or the governing body of aviation, they have the right to state their negative mental being without compromising their job. A healthy work environment is needed for pilots to reduce stress and fatigue outside of their job, leading to a more beneficial factor for better decision-making.

C. Conceptual Framework

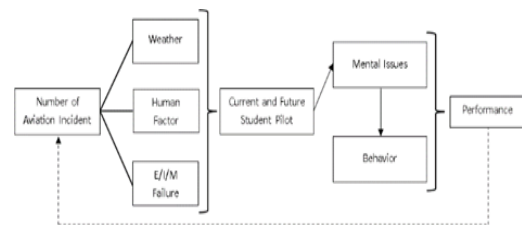


Fig.2. Exploring the Relationship Between Aviation Incidents, Psychological Well-Being, and Accident Causes: A Conceptual Framework

Aviation incidents and accidents are serious events that cause psychological effects on a person. This conceptual framework explains how each variable of the study is connected and how it results in one another. The number of aviation incidents is

branched into three variables, these are weather, human factor, and equipment/instrument/mechanical failure. These three variables are connected to the number of aviation incidents with lines because each is a factor in why these incidents occur.

The mental issues and behavior of student pilots are always interconnected. If one has an issue in his/her mind then it would undoubtedly affect the behavior of oneself which could either positively or negatively affect the pilot's judgment. Having a sound mind is a great asset in controlling a safe, efficient, and effective flight and if the pilot is in a state of turmoil with regard to his mental state, then it would surely lead to a change in behavior wherein it can greatly affect the flight performance and compromise the safety of everyone onboard because the judgment of the pilot is now tainted and affected by his/her erratic behavior.

The mental health of student pilots may or may not impact their performance in aviation accidents. Their psychological well-being can affect decision-making, situational awareness, and flying skills during flights, but these effects vary. While mental health could lead to performance problems contributing to accidents, it is not the sole cause. Technical issues, air traffic controller errors, and environmental factors like weather can also contribute to aviation accidents. Thus, the diagram's line suggests that student pilots' performance may or may not influence the number of aviation accidents.

In summary, aviation incidents and accidents carry significant psychological results. This framework illustrates the interdependence of variables and clarifies their mutual influences. The branches from which aviation incidents emerge are weather, human factors, and equipment or mechanical failures, which can affect the psychological well-being, decision-making, and situational awareness of student pilot license holders. Thus, the stitch line on the diagram signifies that the student pilot's performance may or may not distinctly shape the occurrence of aviation accidents.

D. Statement of the Problem

This study aimed to identify and examine the psychological effects of the number of aviation-related incidents for the student pilots.

- How much do student pilots know about aviation-related incidents in the last decade?
- What behaviors are expected to be shown by student pilots in response to the recent incidents?
- Is there a significant relationship between the behavior of student pilots and the local aviation incidents?
- Is there a significant difference between the respondents when grouped by:
 - Age;
 - College Course;
- How much do student pilots know of the different occurrences of aviation-related incidents, in relation to:
 - Weather;
 - Human Factor;

- Equipment/Instrument/Mechanical Failure?
- Based on the answers of the respondents, why are there differences in their answers when grouped according to:
 - Age;
 - College Course

E. Hypothesis

There is no significant relationship between the behavior of student pilots and local aviation incidents.

There is no significant difference between the respondents when grouped according to their profile

F. Significance of the Study

Student Pilots. This study offers a greater understanding of how exposure to aviation incidents might affect a person's mental state, capacity for decision-making, and overall performance, which is helpful for both current and future student pilots. Student pilots may improve their decision-making abilities, resilience, and coping methods with this knowledge, thus enhancing their safety and performance in this profession.

Local Aviation Schools in the Philippines. This research is vital in the long run for aviation schools providing quality education for student pilots. Having a strong fundamental education with these schools not only prepares students physically but also mentally. A physically and mentally resilient pilot is a vital aspect of having a safe and efficient air transport system because the pilot itself is in good condition to perform all procedures needed to fly the aircraft without compromising the safety of everyone involved.

Aviation Industry. The primary goal of this research is to better understand the causes of aviation accidents, which can include elements like adverse weather, human mistakes, and technical faults. It also looks at how student pilots' mental health affects flight safety. We can make flying safer and improve pilot training by understanding the influence of mental health on pilot decision-making and awareness.

Future Researchers. The aviation industry is known for its high safety standards, and even minor mishaps can result in catastrophic consequences. By the use of this study, future researchers can contribute to enhancing aviation safety. Understanding how mental health factors influence pilots' performance can lead to the development of targeted safety measures. Future researchers can continue to investigate and adopt a more comprehensive pilot's mental health check to identify early warning signs and strategies for preventing incidents related to mental health issues among pilots. This study can also build on a foundation to better investigate the complex relationship between mental health and pilots' performance, eventually leading to safer skies.

2. Methodology

A. Research Design

This study used a mixed-method approach which combines

both quantitative and qualitative methods. The quantitative approach used in this study aims to investigate and determine the psychological effects on student pilot license (SPL) holders by using survey questionnaires to gather and collect data. For the qualitative approach, an interview was conducted in this study to measure the student pilot's insights about aviation-related incidents. The data gathered from the respondents will be used by the researchers to conclude. The researchers used descriptive methods to methodically collect and present information comprehensively and clearly, enabling the researchers to establish a precise groundwork for further analysis of their study. The correlational approach also became viable for the researchers to explore and correlate the relationship between their variables, guiding them to understand changes and relations in their study. Another approach used by the researchers is a quasi-experimental/explanatory approach to acquire information from respondents without the need to randomize them. A case study approach was also used to examine the significance of a single scenario with multiple variables that are relatable to the respondents. The researchers used a survey-type questionnaire to obtain and gather information about aviation-related questions from a large group of respondents from the aviation industry. With this type of questionnaire, the researchers can compare and contrast the questions answered by the respondents, which enables the researchers to analyze the questions and draw their conclusions. The researchers used an interview-type questionnaire to directly collect information from the student pilots. Given that the researchers focused on the psychological effects experienced by student pilots. This approach allows the researchers to gain insights into the thoughts of student pilots regarding aviation-related accidents and incidents. A Cross Tabulation analysis tool was used to compare different variables and how they will affect the answers of the respondents. The respondent's answers will be categorized into variables such as their Age, and their courses whether Aviation or Non-Aviation related. The researchers used the "In-depth interviews" method to collect data from selected student pilots. The Informants were asked a set of questions that the researchers formulated relating to the research topic. When all the interviews were finished, the researchers gathered the answers of the Informants and used the Thematic Analysis method to analyze the data given by the Informants. The researchers looked for the pattern of the answers of each of the Informants concerning the interview questions and checked if there were any similarities or differences among the Informants; answers.

B. Respondents

The respondents of this study are student pilot license holders who are studying in an aviation school. Student pilot license holders know various topics in aviation such as flying, flight operations, and other aviation technicalities. The survey and interview are designed to determine the level of knowledge of student pilots about aviation-related incidents and behaviors

that would identify the student pilot's mental health that relates to this study about their psychological effects in aviation-related accidents. The available data that the researchers collected from the Civil Aviation Authority of the Philippines (CAAP) website was only updated up to the year 2021. The researchers based the population of Student Pilot License (SPL) holders on the gathered data from the CAAP website which shows the list of names for whom they released student pilot licenses. The researchers compiled a list of 191 individuals holding Student Pilot Licenses (SPL) from the Civil Aviation Authority of the Philippines. They applied Slovin's formula $n = N / (1 + Ne^2)$ to decide how many participants they needed for their study, resulting in a target sample size of 130 SPL holders. They calculated the response rate using the formula (responses/sample size) *100 to assess the survey's effectiveness. With this, researchers gathered 24 responses from a sample size of 130 student pilot license holders, resulting in an 18.46% response rate. This rate is deemed acceptable for an external survey, where the ideal range should be more than 10% to 15%.

The respondents are then grouped into 2 profiles based on their Age and College Course as a Student Pilot License (SPL) Holders.

The Informants chosen for this study hold a Student Pilot License (SPL). Their selection is based on their possession of unique answers that effectively address the questions outlined in the Statement of the Problem (SOP). The criteria for choosing these Informants include not only their licensing status but also the quality of their responses. The aim is to gather insights from individuals with a specialized background in aviation, as indicated by their license, and who can contribute meaningfully to the research objectives. Essentially, the Informants are selected for both their qualifications and the relevance of their responses to the study's objectives.

Table 1
Respondents Profile Frequency Table by Age

Age	Frequency	Percentage
19-21	4	16.70
22-24	13	54.20
25 above	7	29.20
Total	24	100.00

The table shows that the majority of the respondents are between ages 22-24 have a frequency of 13 and a percentage of 54.20% followed by ages 25 above with a frequency of 7 and a percentage of 29.20%. Respondents aged between 19- 21 are less frequent with a total number of 4 respondents with a percentage of 16.70%.

Table 2
Respondents Profile Frequency Table by College Course

College Course	Frequency	Percentage
Aviation Related	20	83.30
Non-Aviation Related	4	16.70
Total	24	100.00

The table shows what college courses the student pilots are taking or what they already took having Aviation Related courses the most frequently with a frequency of 20 and a percentage of 83.30%, while student pilots with Non-Aviation Related courses only accounted for 4 respondents or 16.70% of the total sample.

The Informants are the other respondents to this study, and the researchers' conducted interviews with individuals holding a Student Pilot License. The researchers found it intriguing to obtain responses from SPL holders, as this would address the questions outlined in our Statement of the Problem.

C. Settings

The study discusses the psychological effects of aviation-related incidents on student pilots; this would provide information on how they are affected psychologically by aviation incidents. The researchers limited the study by focusing on the significance of the psychological state of the student pilots in flight based on their performance. The population of this study is student pilot license (SPL) holders who are currently residing in the Philippines. The student pilots answered a questionnaire that was provided by the researchers, data gathered from the survey served as the quantitative data that the researchers would analyze. The survey questionnaires categorize the student pilots based on their age bracket and college courses. The researchers interviewed 3 student pilots, the interview questions were based on the statement of the problem and the survey questionnaire. The interview provides qualitative data in this study. Qualitative and quantitative data are the key points of proving the study. The findings of this study serve as vital information about mental health and aviation incidents. Concluding summarizes all the findings of the data gathered. Formulating recommendations provides insights and resolutions to the problems in the aviation field mainly focusing on the psychological factors of student pilots.

D. Instrumentation

There are four Statement of Problems (SOP) used by the researchers, and each one has five Review of Related Literature (RRL). At least five questions are formed from each RRL, the researchers then identify the questions whether it is a survey or interview type of question, and grouped them accordingly. The researchers collected input from various individuals, including an experienced pilot, a former Flight Operations Officer (FOO), and a Guidance Counselor, to improve the questions' quality and reliability. After making necessary improvements, the researchers distributed the questionnaires to more than 30 participants for pilot testing to further validate the questions and collect additional data.

The researchers used the in-depth interview method to gather the other data for their study. They conducted interviews with three licensed student pilots, posing questions relevant to the research. The Informants responded based on their knowledge of the topic. Each Informant's responses were captured using a voice recorder on a cellular device. Subsequently, the answers

were translated, transcribed, and coded to identify the themes within each response to the interview questions.

E. Data Analysis

The data gathered and collected from the respondents of this study is analyzed using statistical tools such as Frequency and Percentage for the respondents' Profile, Weighted Mean for the survey questionnaire that used a Likert Scale to measure the respondents' agreement with the provided statement/questions, One-way ANOVA and Independent T- Test for the respondents answer in connection with the profiles, and Pearson's Correlation Analysis for the significance of the relationship between the student pilots behavior and the local aviation incidents. The collected data, which has been gathered and obtained, is processed and analyzed with the use of the case study method for the interview questionnaire to collectively assess the insights and knowledge of the respondents regarding their cognition of a scenario with multiple variables relatable to the local aviation accidents. Data from the in-depth interviews will undergo Thematic Analysis for familiarization. Initial codes will be generated to highlight patterns in Informant responses. A comprehensive review of these initial codes will then lead to the creation of combined and final codes, which will be used to interpret the data.

F. Ethical Considerations

The researchers showed informed consent for participation to the respondents before they proceeded. The researchers will not force the respondents to participate if they refuse to answer surveys or any questions. The researchers will ensure the complete confidentiality of the respondents and Informants. No personal information such as name, age, sex, household income per month, or college course shall be exposed or mentioned in the study. The researchers ensured that the published works, data, and ideas used in this study were properly acknowledged through appropriate citations. The researchers used plagiarism detection software as needed to look for probable cases of unintended plagiarism. These tools served as a preventative measure to make sure that the researcher's contributions to this study were original. By complying with these ethical guidelines, the researchers guaranteed that the use of AI tools in this study complies with the highest moral standards, respects the rights and well-being of respondents, and advancement of AI technology in conducting this study.

3. Result And Analysis

A. The level of knowledge among aviation students and student pilots regarding aviation-related accidents or incidents in the last decade

Table 3:

The highest and lowest mean according to respondents' answers on how much aviation students and student pilots know about aviation-related accidents or incidents in the last decade.

Statement	Weighted mean	Standard deviation	Remarks
-----------	---------------	--------------------	---------

Are you aware that the examined cases were caused by many factors, such as pilot error, technical failure, air traffic control, or weather-related events?	3.533	0.620421	Strongly Agree
Based on NTSB reports, helicopters do have more accidents than airplanes. Are you aware of this information?	2.88	0.739049	Agree

Remarks Criteria: Strongly Agree: 3.51 - 4; Agree: 2.51 - 3.5; Disagree: 1.51 - 2.5; Strongly Disagree: 1 - 1.5

Based on Table 3, most of the statements agree, but the highest mean is the statement with the weighted mean of 3.58 in which respondents strongly agree that they are aware that aviation-related incidents were caused by many factors, such as pilot error, technical failure, air traffic control, or weather-related events. While the lowest mean in the statement is a statement with a weighted mean of 2.88 which the response agrees that they are aware that the examined cases where helicopters do have more accidents than airplanes. The commonly identified factors contributing to this were linked to awareness of the situation, adherence to procedures and unsafe behaviors, decision-making abilities, automation design, and organizational policies governing automation use. (Read, G. J. M. et al, 2020).

B. The expected behaviors to be shown by student pilots in response to the recent incidents

Table 4

The highest and lowest Weighted Mean according to the respondents' answers with regards to the behaviors expected to be shown student pilots in response to the recent incidents.

Statement	Weighted mean	Standard deviation	Remarks
1. Do you believe that emotional support from significant others has a positive impact on the performance, situational awareness, and aviation safety of pilots?	3.6250	0.49454	Strongly Agree
Are you aware of the pilot aircraft-assisted suicides that	2.2917	0.75060	Disagree

Remark Criteria: Strongly Agree: 3.51 - 4; Agree: 2.51 - 3.5; Disagree: 1.51 - 2.5; Strongly Disagree: 1 - 1.5

Table 4 shows the highest and lowest weighted mean regarding the belief in the positive impact of emotional support on pilots' performance and their awareness of pilot aircraft-assisted suicides one year after 9/11. Respondents strongly agree that pilots benefitting from emotional support positively influence performance, situational awareness, and aviation safety. They acknowledge the importance of emotional support for pilots, believing it enhances effectiveness and ability to handle high-pressure situations. On the other hand,

respondents' express disagreement on their awareness of pilot aircraft-assisted suicides post-9/11. This disagreement suggests some may admit a lack of knowledge, while others may view the topic as sensitive, impacting individuals emotionally. Overall, respondents vary in their awareness of the topic, and some find it too sensitive to discuss openly. Student pilots' self-confidence correlates with their overall flight performance, enabling good decision-making in challenging situations with quick and accurate responses. Accidents and incidents impact pilots' emotions and situational awareness. Emotional training can enhance pilots' overall performance, and improved situational awareness contributes to enhanced aviation safety (Luciani et al, 2022; Lu et al, 2023).

C. The significant relationship between student pilots' behavior and local aviation incidents

Table 6

Significant Differences in Perceptions of Student Pilots with Different College Courses in Emotional Support and Impact on Student Pilots' Performance and Safety

Statement	Mean Difference	Sig.
Do you believe that emotional support from significant others has a positive impact on the performance, situational awareness, and aviation safety of pilots?	-0.45000	0.000

Table 6 shows a very significant difference among respondents regarding the belief that emotional support from significant others can enhance pilots' overall performance, marked by a statistically significant mean difference of -0.45000 and a significance level of 0.000. Some Respondents who were not in aviation-related courses when they were in college often perceive pilots as professionals whose mental well-being, they assume, does not significantly influence their flight performance due to stable high-paying jobs. This shows a potential lack of awareness among respondents about the intricate relationship between pilots' mental states and their proficiency in flying an aircraft. Pilots do need emotional support since it enhances their overall performance, which can also enhance aviation safety. Pilots who have sufficient self-confidence are pilots to make decisions quickly and accurately (Luciani, 2022).

Table 7

Significant Difference on level of knowledge of Student Pilots based on their College Course

Statement	Mean Difference	Sig.
As human factors contribute approximately 75% of aircraft accidents, are you aware that situational awareness and non-adherence to procedures were significant contributing factors?	-.70000	.002

Do you think aircraft mechanics properly monitor the health of the aircraft?	-20000	.046
--	--------	------

Table 7 shows two statements that have a mean difference of -.70000 and -.20000, a significance level of .002 and .046. The table shows the level of awareness of the respondents in the aforementioned statements which highlights the significant impact of situational awareness and noncompliance to procedures and suggests potential gaps in monitoring procedures for the health of the aircraft. This only suggests that the respondents have a lack of emphasis on these critical aspects, which may potentially lead to increased accident risks. Understanding their influences will aim to address issues, promoting a culture of safety and continuous improvement in the aviation industry (Kharoufah et. al., 2018).

Table 8

Significant differences in respondents' knowledge of the cause of aviation-related incidents.

Statement	Mean Difference	Sig.
Are you aware that the examined cases were caused by many factors, such as pilot error, technical failure, air traffic control, or weather-related events?	-.50000	.000

Table 8 shows a very significant difference among respondents regarding the fact that they are aware that many factors, such as pilot error, technical failure, air traffic control, or weather-related events, caused the examined cases of incidents in aviation. Most of the respondents are aware that various factors cause aviation-related incidents and they have a clear perspective of the root cause of incidents when it comes to aviation. This shows that aviation-related accidents were caused by various factors categorized as pilot error, technical failure, air traffic control, or weather-related events. Examining aviation accident databases to establish the number of aircraft incidents in South Sudan, along with information on aircraft manufacturers and models, fatality figures, and the reasons behind the accidents. These reasons are categorized as either pilot error, technical failures, issues with air traffic control, or events influenced by weather conditions (Deng, 2021).

D. The level of Knowledge aviation students and student pilots license holders possess in terms of weather, human factor, and equipment failure type of aviation-related incidents

Table 9

The Highest and Lowest Weighted Mean according to respondents answer with regards to their knowledge on aviation-related incidents type of occurrence

Statement	Weighted mean	Standard deviation	Remarks
1. Are you aware that despite the advancement of technology weather causes concern for aviation safety?	3.58	0.583592	Strongly Agree

2. Do you believe that fatal weather-related general aviation accidents occur most frequently between October and April, on weekends, in early morning and evening periods?	2.80	0.72106	Agree
---	------	---------	-------

Remarks Criteria: Strongly Agree: 3.51 - 4; Agree: 2.51 - 3.5; Disagree: 1.51 - 2.5; Strongly Disagree: 1 - 1.5

Table 9 shows the highest and the lowest calculated weighted mean for questions regarding weather and human factors. It shows the strong level of certainty and uncertainty of the respondents when faced with questions regarding weather and human factor aviation-related incidents. Student pilots show a high level of knowledge in aviation-related incidents, particularly in weather and how it affects aviation safety. This is because these student pilots are already taking up their flying lessons and having bad weather conditions affects their ability to fly the aircraft since these student pilots are flying under visual flight rules which hinders them from flying under any unfavorable weather conditions. On the other hand, student pilots show a low level of knowledge in terms of the specific times where most of the fatal weather-related general aviation accidents happen. This may be due to how weather conditions are taught to them; it is broad and in general and does not contain any specific studies that include the prominent months where these fatal weather-related general aviation accidents happen as these types of data are not widely available and can only be accessed if requested to the authority. Weather-related incidents are reported by pilots which will be stored and recorded to the authority's database which will undergo review at a later time (Long, 2022).

E. The differences of the respondents' answers when grouped by age and college course

Table 10

Thematic Analysis on the expected behaviors to be shown in response to recent incidents

Master Theme	SuperOrdinate Theme
1.1 Sharing the same college course positively impacts pilots' performance, Situational awareness, and aviation safety through emotional support.	Knowledge
1.2 Emotional regulation for pilots evolves with age, affecting their decision-making in high-pressure situations.	

Master Theme 1.1 Sharing the same college course positively impacts pilots' performance, Situational awareness, and aviation safety through emotional support.

SuperOrdinate Theme 1.1: Knowledge

Informant 1 - "For me, there is a positive impact when students take the same college course because they already have advanced knowledge about flying. Some people take a different

course first, and when they start flight training, it's like feeling their way through, especially during ground school. However, those who pursued aviation-related courses in college already have a basic understanding of what is taught in flying school. For them, it's more about honing skills.”

Informant 2 - “For me, yes it varies, because you come from an aviation school, so you have basic knowledge about flying and unlike those from non-aviation courses, who goes into flying, starts from nothing, so 0 knowledge about flying.”

Informant 3 - “Yes, it has a positive impact when it comes to becoming a pilot because you gain background knowledge in subjects that you need to take. Just like us, we have a PCAR subject and we gain knowledge and in college, it is discussed thoroughly unlike in ground school it is not discussed thoroughly it is discussed only for a few hours then you will take the exam right after. We also have weight and balance in college. It is discussed part by part and in in-ground schooling it is not discussed thoroughly and if you fail the exam you will retake it. It is a big positive impact if your course is the same as the job that you will take in aviation.”

Table 10 shows the master themes from the interview questions and the SuperOrdinate theme from the answers of the Informants. All of the Informants said that knowledge is the main thing when it comes to sharing the same college course which positively impacts pilots' performance, situational awareness, and aviation safety through emotional support. This means that the people who are aiming to become student pilots have to get an aviation-related college course so that they will have more knowledge and will be able to familiarize themselves with basic aviation knowledge. Taking aviation-related courses in college would get student pilots the theoretical knowledge about the aviation industry to understand things better compared to the people who did not get the aviation courses in their college years. Student pilots who lack knowledge are more likely to commit mistakes and have work-related stress that leads to accidents (KILIÇ, 2019).

Master Theme 1.2: Emotional regulation for pilots evolves with age, affecting their decision-making in high- pressure situations.

SuperOrdinate Theme 1.2: Experience

Informant 1 - “I don't think that age has nothing to do with emotional regulation? It doesn't really matter to me, it really depends on the experience a pilot has in flying.”

Informant 2 - “For me, I do not think it varies with age, it really depends on how long you are in the field.”

Informant 3 - “No, it does not, you can start being a student pilot at any age. For example, if there is a student pilot who is 21 but has been flying for 2 years and there is another student pilot at the same age and just started for a few months, who is going to be more emotionally sound? For me, it is the experience that matters regardless of age.”

Table 10 reveals the Master theme from the interview

questions and the SuperOrdinate themes from the answers of the Informants to the questions. All the Informants agreed that the emotional regulation of a pilot does not change as they get older but rather as they gain experience. It depends on when someone just started flight school. A 21-year-old might have 2 or 3 years of experience in flying, while another person of the same age might only have a few months of it. This means that a person's emotional regulation does not get better just with age, but rather the actual flying experience is what makes them wiser. Pilots who train their emotions increase their situational awareness and reduce the likelihood of aviation- related incidents. (Lu. T. et al, 2023).

Table 11
Thematic analysis on the age that contributes to the experiences and emotions of Student Pilots

Master Theme	SuperOrdinate Theme
2.1 Various age brackets about their factors that contribute to the notable differences about their behavior.	Experience

Master Theme 2.1: What factors contribute to the notable differences in responses about behavior across various age brackets?

SuperOrdinate Theme 2.1: Experience

Informant 1: “...But as you age and become more experienced as a pilot, flying becomes a routine, a cycle in your life...”

Informant 2: “...More flying hours, more flight experience, the more one's knowledge expands about emergency response...”

Informant 3: “ There are accidents or incidents that can happen because sometimes we can commit mistakes in pre-flight briefing and not all are followed in the checklist. When it comes to behavior the pilot must always be positive and he/she must not have hidden problems.”

Table 11 shows the Master Themes which are the Interview Questions asked to the Informant and the SuperOrdinate Theme which are the main points of the Informants' answers. All of our Informants say that Experience is one of the factors in the difference in answers of the respondents on the survey questionnaire. This is attributed to the fact that those starting their flying career are still young in terms of flight knowledge and performance. They are prone to mistakes and such mistakes are to be rectified as they finish their studies and flying hours. On the other hand, those who have stayed long in the flying industry are the experienced ones because they have trained and accumulated lots of flying hours through the course of their career. This means that if pilots undergo sufficient training, they will be able to safely carry out the flight even in high-risk situations. (Wang et.al, 2021).

Table 12
Thematic analysis on the level of knowledge in relation to the type of aviation-related incidents

Master Theme	SuperOrdinate
--------------	---------------

	Theme
4.1 The marked differences in responses across various age brackets concerning their knowledge of weather, human factors, and equipment failure in aviation-related incidents.	Knowledge
4.2 The understanding of aviation-related incidents or factors such as weather, human factors, and equipment failures is influenced by respondents' academic background; Aviation versus Non-Aviation related college course.	Knowledge

Master Theme 3.1: The marked differences in responses across various age brackets concerning their knowledge of weather, human factors, and equipment failure in aviation-related incidents.

SuperOrdinate Theme 3.1: Knowledge

Informant 1: "...you need to have knowledge about advanced weather or weather forecasting, human factors, and other effects on you, as well as equipment, instrument, and mechanical failure since the equipment on a Cessna is different from that on a larger airplane..."

Informant 2: "I said earlier that it does not vary on age, but rather on your knowledge and how long you've been in the field."

Informant 3: "...You will research the weather, the terrain and where your destination is. Let's say your flight is from Mactan to Sibuyao so research on the traits you will face..."

Master Theme 3.2: The understanding of aviation-related Incidents or factors such as weather, human factors, and equipment failures is influenced by respondents' academic background; Aviation versus Non-Aviation related college course.

SuperOrdinate Theme 3.2: Knowledge

Informant 1: "...Basically, the impact of this on understanding aviation-related matters is that they already know – they immediately know. They have knowledge about it. They can, I mean, they are familiar with things like weather, human factors, and equipment failures. It's like, those are already in the vocabulary of aviation-related respondents..."

Informant 2: "...For aviation-related courses, they will investigate it more because in Philippine Civil Aviation Authority (PCAR), it contains the investigations that must be conducted, which are the possible cases that have a cause or an effect and then that's all I know"

Informant 3: "...The equipment of aircraft has differences so he started from nothing when he tried to become a pilot, he just needs to study more compared to us who already have background knowledge. For us it is just like a review. Unlike him he has to study from zero. It's like he entered grade school again because he has zero knowledge."

Table 12 shows the Master Themes which are the Interview Questions asked to the Informant and the SuperOrdinate Theme which are the main points of the Informants' answers. All of the

informants answered with knowledge of the marked difference in terms of the age and understanding of a student pilot. Varying age brackets and their understanding can be correlated well since younger inexperienced student pilots tend to have limited knowledge because they are still new and learning the different aviation information, especially factors affecting aviation-related incidents. Student pilots, especially those who are in their early stages of flight training, are more prone to accidents and work-related stress due to their lack of knowledge in the field. (KILIÇ, 2019).

4. Discussion

A. Conclusions

Based on the results and analysis, the following were concluded

- Based on the results and analysis, there is a discrepancy that highlights a potential gap in understanding the complex nature of aviation incidents among the surveyed group. There is a variation in the degree of awareness among respondents, the respondents are aware that the accidents were caused by various factors such as pilot error, technical failure, air traffic control, or weather-related events. On the other hand, the respondents are less aware that helicopters have more accidents or incidents than airplanes. This highlights the need for targeted educational efforts to enhance awareness and knowledge within the surveyed group, fostering a more comprehensive understanding of aviation safety dynamics.
- The study shows that most agree that emotional support is vital for pilots' performance and safety, especially in challenging situations. However, there's a noticeable disagreement about awareness of pilot aircraft-assisted suicides after 9/11, indicating varying knowledge levels and sensitivities. Some admit a lack of knowledge, while others find the topic sensitive. Overall, the research highlights the link between student pilots' self-confidence and overall flight performance, emphasizing the importance of emotional training for enhanced performance and situational awareness, ultimately contributing to improved aviation safety.
- There is no significant relationship between the behavior of student pilots and local aviation incidents. It is due to the reason that despite facing challenges in flying, the countless training that pilots have undergone will lead them to do the right thing despite being in a stressful situation because the challenges they encounter along the way have also trained them to become sharp in performing flight duties without compromising safety.
- There is a significant difference between the respondents when grouped by age and college courses

in terms of their awareness of factors that contribute to aviation-related incidents. The study reveals a crucial knowledge gap among respondents in understanding the varied causes of aviation incidents. There's a notable difference in beliefs about the positive impact of emotional support on pilots, particularly among those without aviation-related backgrounds. Additionally, disparities exist in awareness based on college courses, highlighting the need for targeted education. These findings emphasize the importance of comprehensive education and interventions to enhance safety awareness within the aviation industry.

- The study shows disparities in knowledge levels of student pilots, particularly aviation-related incidents concerning mostly weather factors. The analysis reveals a distinct contrast in responses, with older student pilots demonstrating higher certainty, likely attributed to their practical field experience. On the other hand, younger student pilots show uncertainty, suggesting a need for improved theoretical education and exposure to the field. The identified lack of knowledge, especially in weather-related aviation incidents, poses potential safety risks. Addressing these gaps through enhanced education and training is needed to ensure a safer aviation environment.
- The study shows that it's evident that several key factors significantly influence the behavior, emotions, and experience of student pilots regarding flying-related matters. Two primary categorizations that appear to impact these aspects are age and the pursuit of aviation-related college courses. The data highlights the crucial role of experience and education in shaping the behavior, emotions, and understanding of student pilots in flying-related matters. While age might not inherently dictate emotional regulation in pilots, the accumulation of flying experience is seen as a more pivotal factor in fostering maturity and expertise. Additionally, undertaking aviation-related college courses seems to significantly bolster a pilot's knowledge base, potentially resulting in better comprehension and performance in aviation-related scenarios compared to those without such educational backgrounds.

B. Recommendations

Based on the discussed conclusions, the recommendations are as follows:

- Student pilots' knowledge about aviation-related incidents that have occurred in the last decade:
 - Emphasize the importance of being critical consumers of information to have broad access to the knowledge and improve awareness of aviation-related incidents.
 - Highlight safety records and create more robust training programs about aviation-related incidents

and ensure confidence in the school's standards.

- Collaborate with other aviation industry experts, safety regulators, and experienced professionals to conduct specialized training sessions to enhance the knowledge and awareness of student pilots.
- Explore existing research or studies that investigate the potential correlation between Age and aviation incidents. Understanding the findings and methodologies used in such studies can provide valuable insights.
- The expected behaviors to be shown by student pilots in response to the recent incidents:
 - Prioritize seeking emotional support and staying informed about industry challenges.
 - Integrate emotional training, fostering open dialogue and considering cultural nuances.
 - Prioritize the mental health of student pilots, develop resources, and raise awareness on mental health issues in the industry.
 - Focus on the emotional resilience of pilots and innovative training methods for improved performance and safety.
- The significant relationship of student pilots' behavior and local aviation incidents
 - Further enhance situational awareness skills to make critical reflexes to adjust the safety of the flight
 - Assess student pilots if they are receiving the necessary safety training and their efficiency in decision-making skills
 - Aircraft and Airlines should provide an advanced emergency simulation for pilots to work on their responses in critical situations
 - Analyze if aviation schools are preparing their students to conduct flight based on their curriculum and if they are informing students on what to expect in flying schools.
- The significant difference between the respondents when grouped by their profiles
 - Implement comprehensive education on various factors contributing to aviation incidents, emphasizing emotional support's positive impact on performance and safety.
 - Enhance curriculum content, focusing on situational awareness and procedural adherence to better prepare students for the complexities of aviation.
 - Prioritize safety culture, addressing gaps in knowledge among professionals and fostering a continuous improvement mindset.
 - Explore innovative methods to bridge knowledge gaps and improve awareness of aviation-related factors among respondents from diverse backgrounds.
- The level of knowledge student pilots possesses in terms of weather, human factor, and equipment failure

type of aviation-related incidents:

- Implement a more robust curriculum and specialized training that focuses on enhancing knowledge on aviation-related incidents particularly weather, human factors, and equipment failures to improve overall aviation safety.
- Integrate practical and hands-on experience in the curriculum to bridge the gap between theoretical knowledge and real-world application.
- Create a standardized reporting system to enhance data collection and analysis for aviation-related incidents to identify trends and areas for improvements
- Investigate the effectiveness of the training methodologies for the student pilots in improving their knowledge of these incidents and the practical application of these to the student pilots.
- Differences of answers that correlate to the behavior, emotion, and experience of the student pilots to flying related matters that categorizes by:
 - Develop training programs that recognize the varying levels of experience among student pilots.
 - Prioritize hands-on flying experience to supplement theoretical knowledge gained through aviation-related college courses.
 - Implement regular evaluations and feedback mechanisms throughout a pilot's career. This allows for ongoing assessment of skills, emotions and behavior identifying areas for improvement, and providing targeted support or additional training where needed.
 - Collaborate with educational institutions to design specialized programs that blend theoretical knowledge with practical application, preparing students comprehensively for the demands of the aviation industry.

References

- [1]. C.S, K., & J, A. B. (2022). Impact of human factors in aircraft accident mitigation and aircraft maintenance training needs in post COVID-19 aviation. *Aircraft Engineering and Aerospace Technology*, 94(8), 1296–1302.
- [2]. Deng Ayiei, A. G. (2021). Aviation Safety in South Sudan. *International Journal of Multidisciplinary Research and Analysis*, 04(08).
- [3]. Dong, W., et al. (2016). Relation of acute stress reaction with locus of control of pilots after flight accidents of other pilots in the same unit. *Academic Journal of Second Military Medical University*, 37(9), 1144–1147.
- [4]. Fultz, A.J & Ashley, W.S. (2016). Fatal weather- related general aviation accidents in the United States. *Physical Geography*, 37(5), 292-312.
- [5]. Insley, J., & Turkoglu, C. (2020). A contemporary analysis of aircraft maintenance-related accidents and serious incidents. *Aerospace*, 7(6).
- [6]. Kane, A. N., et al. (2021). Review of Aircraft Crash Reports and Engine Pod Location. In 2021 IEEE Pune Section International Conference, PuneCon 2021. Institute of Electrical and Electronics Engineers Inc.
- [7]. Kharoufah, H., et al. (2018, May 1). A review of human factors causations in commercial air transport accidents and incidents: From to 2000–2016. *Progress in Aerospace Sciences*. Elsevier Ltd.
- [8]. KILIÇ, B. (2019). HFACS Analysis for Investigating Human Errors in Flight Training Accidents. *Journal of Aviation*, 3(1), 28–37.
- [9]. Laukkala, T., et al. (2018). Pilot posttraumatic stress disorder and fatal aviation accidents. *Aviation Psychology and Applied Human Factors*, 8(2), 93–99.
- [10]. Long, T. (2022, January 18). Analysis of Weather-Related Accident and Incident Data Associated with Section 14 CFR Part 91 Operations. *Collegiate Aviation Review*. University Aviation Association.
- [11]. Luciani, F., et al. (2022). Safety at high altitude: the importance of emotional dysregulation on pilots' risk attitudes during flight. *Frontiers in Psychology*, 13.
- [12]. Lu, T., et al. (2023b). The influence of emotion induced by accidents and incidents on pilots' situation awareness. *Behavioral Sciences*, 13(3), 231.
- [13]. Majumdar, N., Marais, K., & Rao, A. (2021). Analysis of general aviation fixed-wing aircraft accidents involving inflight loss of control using a state-based approach. *Aviation*, 25(4), 283–294.
- [14]. Mulder, S., & de Rooy, D. (2018). Pilot mental health, negative life events, and improving safety with peer support and a just culture. *Aerospace Medicine and Human Performance*, 89(1), 41–51.
- [15]. O'Hagan, A. D., Issartel, J., Nevill, A., & Warrington, G. (2017). Flying into Depression. *Workplace Health and Safety*, 65(3), 109–117.
- [16]. Shekhar, A. C., & Blumen, I. J. (2023). Fatal Air Medical Accidents in the United States (2000-2020). *Prehospital and Disaster Medicine*, 38(2), 259–263.
- [17]. Vuorio, A., et al. (2018). Aircraft-assisted pilot suicides in the general aviation increased for one-year period after 11 september 2001 attack in the United States. *International Journal of Environmental Research and Public Health*, 15(11).
- [18]. Wang, L., & Zhang, J. (2020). The effect of psychological risk elements on pilot flight operational performance. *Human Factors and Ergonomics in Manufacturing*, 30(1), 3–13.
- [19]. Wang, Z., Jiang, Z., & Blackman, A. (2021). Linking emotional intelligence to safety performance: The roles of situational awareness and safety training. *Journal of Safety Research*, 78.
- [20]. Wild, G., et al. (2021). The need for aerospace structural health monitoring: A review of the need for aerospace structural health monitoring: A review of aircraft fatigue

- accidents. *International Journal of Prognostics and Health Management*, 12(3), 1–16.
- [21]. Yakovytsk, L., et al. (2022). Psychological features of emotional stability as a safety factor of air traffic specialists. In *Transportation Research Procedia* (Vol. 63, pp. 294–302).
- [22]. Zhou, B. (2022). Fuzzy Sets Qualitative Comparative Analysis (fsQCA) of Helicopter Accident Casualties Based on HFACS Model. In *Lecture Notes on Data Engineering and Communications Technologies* (Vol. 123, pp. 521–529). Springer Science and Business Media Deutschland GmbH.