

# Aviation Accident Data Analysis Project Summary



## Project Overview

- This aviation accident data project analyses and identify key trends, patterns, and factors contributing to accidents. The goal is to provide actionable insights to improve aviation safety for stakeholders like airline operators, aircraft manufacturers, and safety regulatory agencies using Python and Jupyter.

# Table of Contents

- Introduction
- Problem Statement:
- Key questions:
- Stakeholder analysis
- Objectives and goals
- Create Visualizations
- Recommendations
- Conclusions
- Next steps

# Introduction

1. Safety in aviation is a global concern
2. This project analyzes factors causing aviation accidents
3. Identify trends and propose mitigation solutions

## **Problem Statement:**

Despite all the mitigation measures put by the Aviation Safety Department accidents still continues to occur. This project will help us see the trends and also the measures that can be put.

## Key questions:

1. Are there specific weather seasons where accidents are high?
2. What trends in accident occurrences can be observed from different phases of flight?
3. what are the extent damage of aircrafts after accidents in some locations ?
4. Which regions have the highest accident rates?

# Stakeholder analysis

The groups that will benefit from this findings are:

1. Airline operators
2. Aircraft manufactures –
3. Safety Regulations Agencies.

# Objectives

1. Data exploration and cleaning
2. Identify key trends and Weather Condition patterns in aviation accidents to understand common causes.
3. trends in accident occurrences can be observed from different phases of flight.
4. Evaluate high-risk regions
5. Evaluate high-risk regions to see if certain geographical areas have more accidents.
6. identify how many aircrafts result in minor damage, substantial damage, or extensive damage in certain locations after the accident.
7. Provide actionable safety insights



# Charts Analysis

## Weather Conditions

- 1. IMC (Instrument Meteorological Conditions): 8 accidents
- 2. VMC (Visual Meteorological Conditions): 5 accidents
- 3. UNK (Unknown conditions): 2 accidents

## Flight Phase Analysis

- 1. Landing (17.36%)
- 2. Takeoff (14.05%)
- 3. Cruise (11.55%)
- 4. Maneuvering (9.16%)

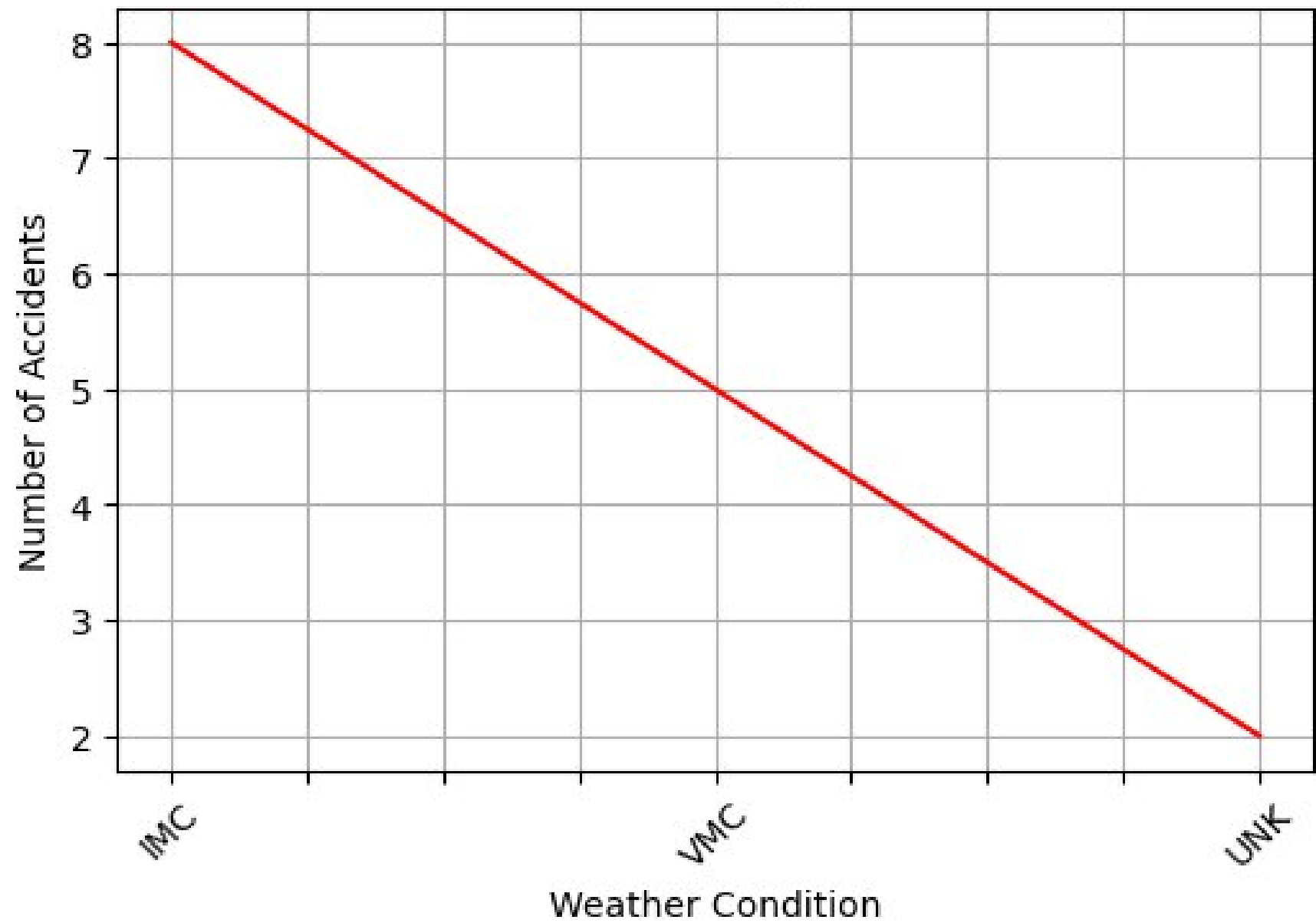
## High-Risk Locations

- 1. ANCHORAGE, AK (434 accidents)
- 2. MIAMI, FL (200)
- 3. ALBUQUERQUE, NM (196)
- 4. HOUSTON, TX (193)
- 5. CHICAGO, IL (184)

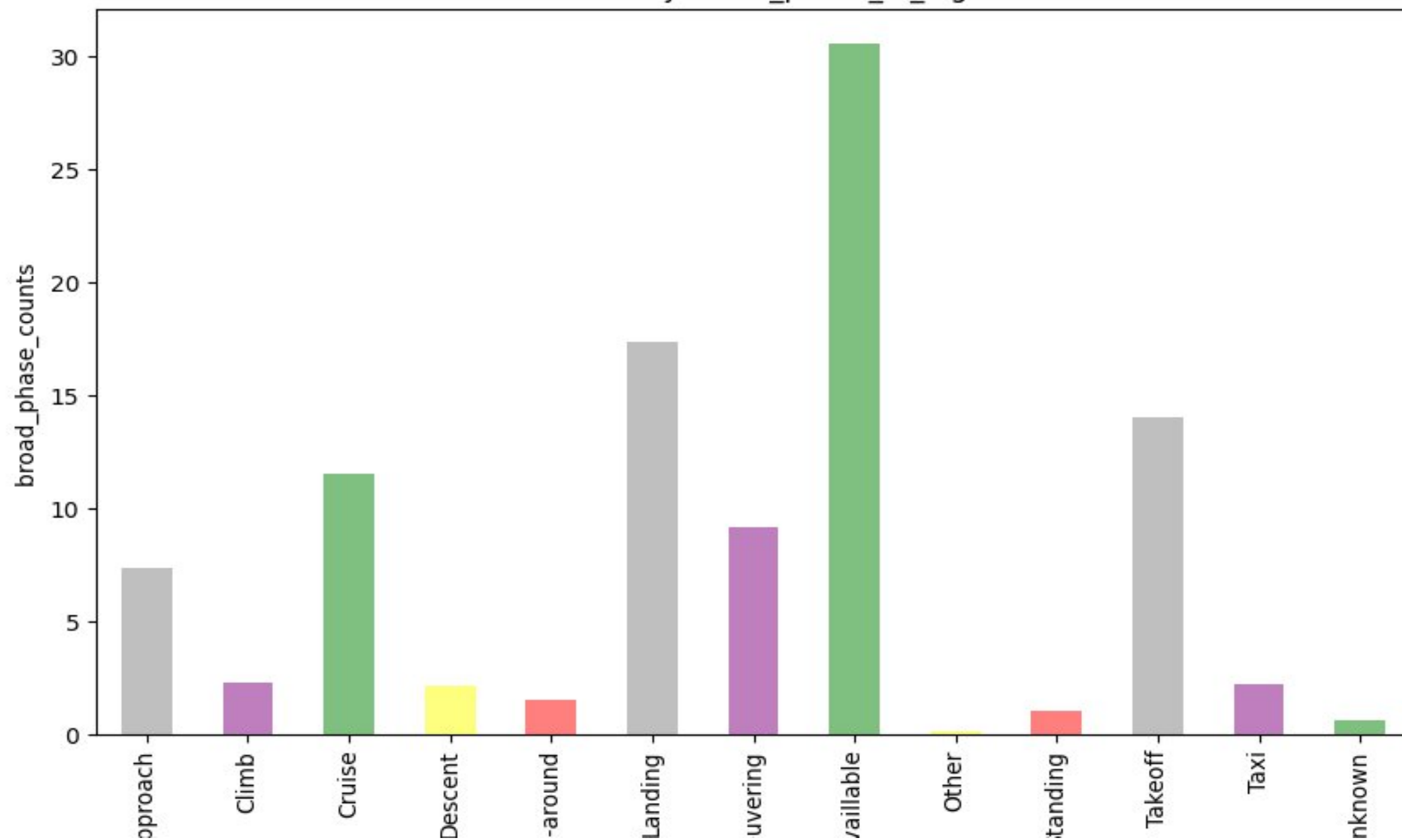
## Aircraft Damage

- 1. Substantial damage (72.17%)
- 2. Destroyed (20.95%)
- 3. Minor damage (3.16%)

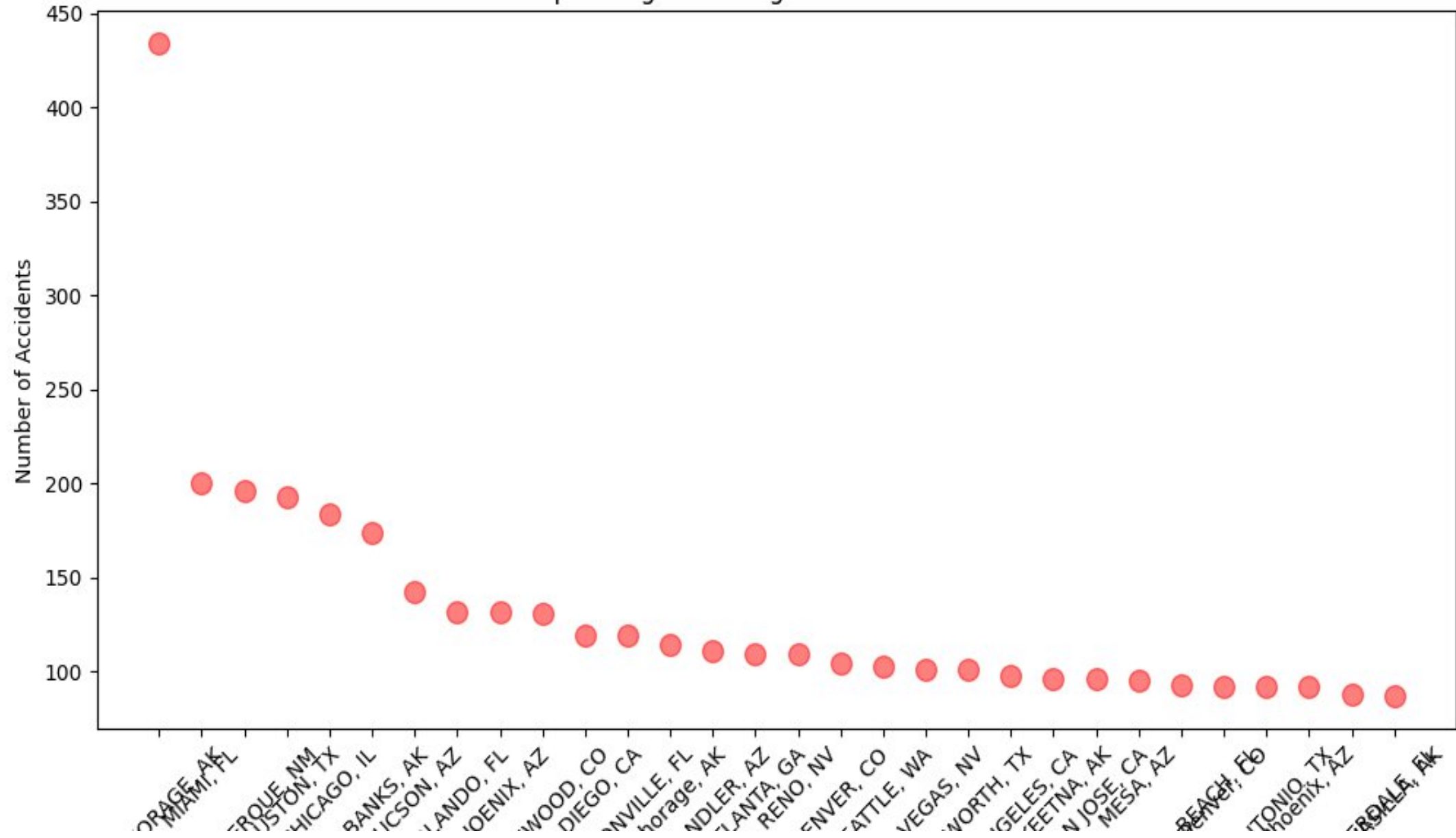
Weather Conditions During Aviation Accidents



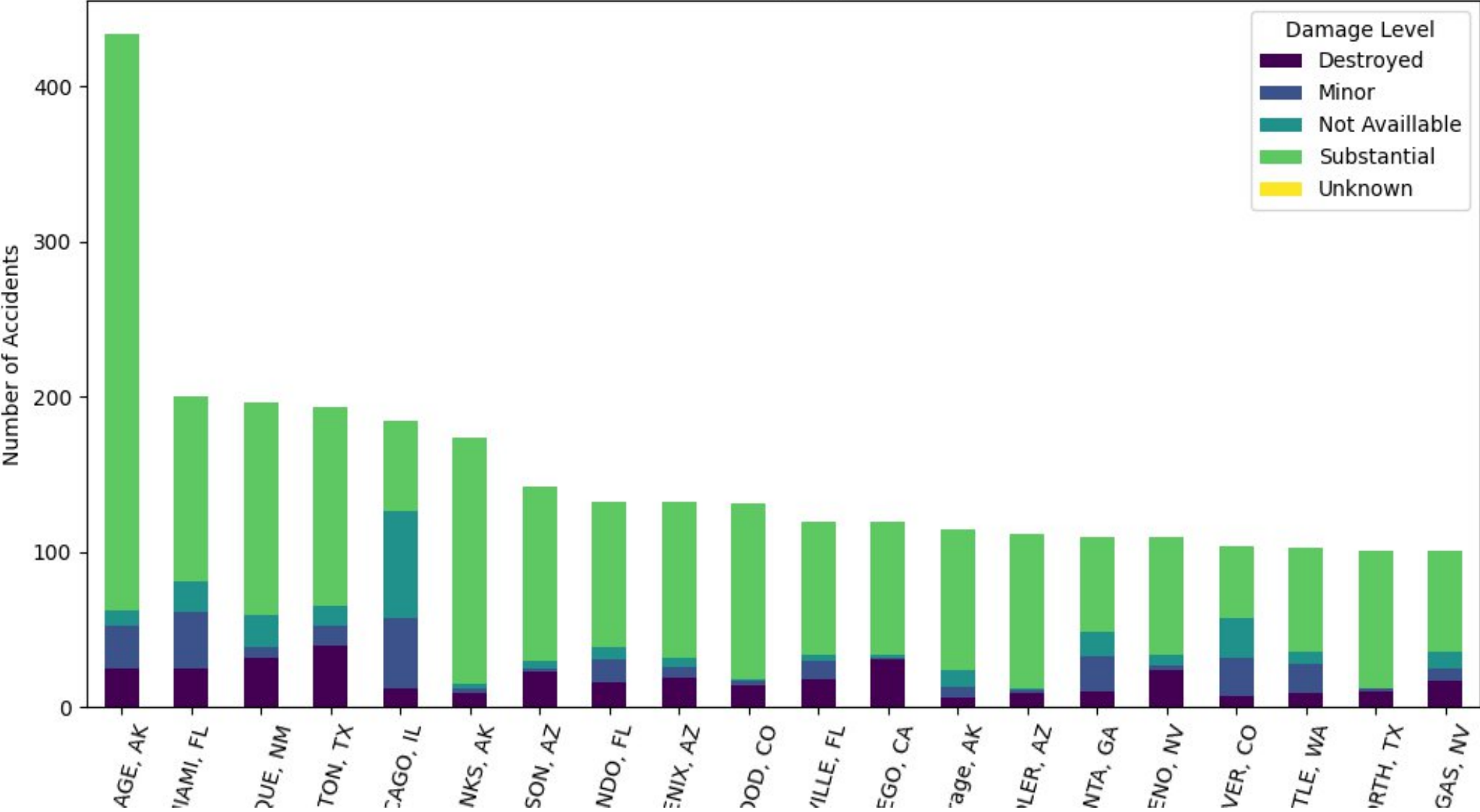
Accidents by broad\_phase\_of\_flight



### Top 10 High-Risk Regions for A Accidents



Aircraft Damage by Location



# Recommendations

1. Enhanced Training for pilots in IMC conditions
2. Focus on Landing/Takeoff phases where accidents are most frequent
3. Regional Safety Programs for high-risk areas like Alaska
4. Improved Maintenance to reduce substantial damage occurrences

## CONCLUSION

1. Weather is a great Risk for accidents
2. highest percentage of accidents occur during maneuvering.
3. High-Risk Regions Need safety measures
4. Damage Severity is Location-Dependent
5. Data and Technology Are Game-Changers

## Next Steps

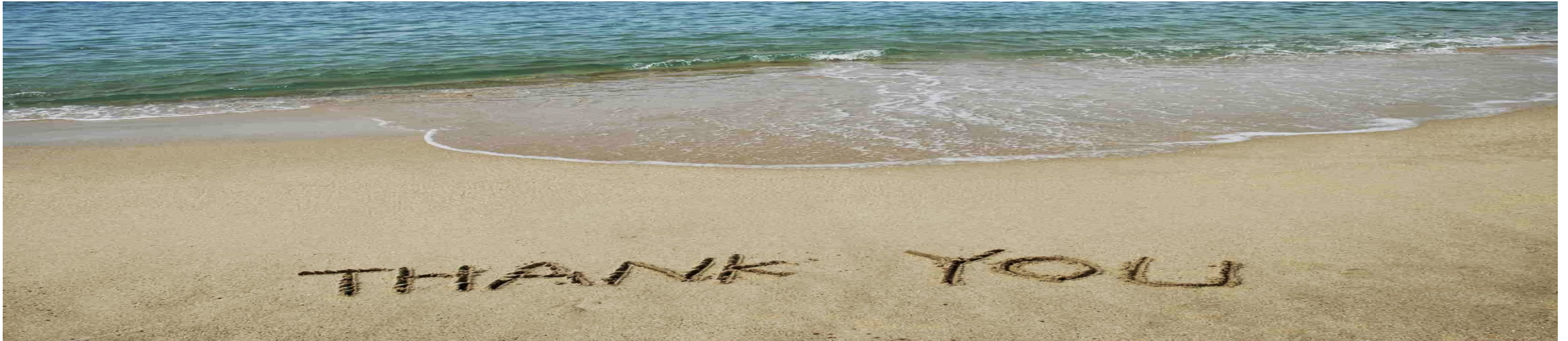
1. Identify key patterns in aviation accidents
2. stakeholders to enhance aviation safety measures
3. Implementation of recommended safety measures



## PROMPT QUIZ

Could machine learning be applied to predict accident risks based on these trends?

## THANK YOU



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