AVIATION ACCIDENT RISK ANALYSIS

PHASE 1 PROJECT – EXECUTIVE SUMMARY

BUSINESS UNDERSTANDING

- The company plans to expand into the aviation industry by offering commercial and private aircraft services.

- Data-driven insights are required to guide aircraft purchase decisions and manage safety risks.

KEY STAKEHOLDERS

- • Head of Aviation Division
- • Shareholders
- • Regulatory Bodies
- • Suppliers
- • Operations & Safety Teams

DATA OVERVIEW

- Source: National Transportation Safety Board (1962–2023)

- • 88,889 accident records
- • 31 variables (5 numerical, 26 categorical)
- • Majority single-engine aircraft
- • Most incidents reported zero injuries

KEY FINDINGS: WEATHER CONDITIONS

- • VMC: ~77.3% resulted in substantial damage
- • IMC: ~55.9% resulted in destroyed aircraft

- Poor weather significantly increases accident severity.

KEY FINDINGS: ENGINE TYPES

- • Electric & Unknown engines show highest destruction rates
- • Reciprocating & Turbo engines show lowest destruction rates
- • Reciprocating engines have lowest fatality rate (~18.9%)

BUSINESS RECOMMENDATIONS

- 1. Prioritize Reciprocating & Turbo Engine Aircraft
- 2. Limit IMC Operations & Invest in Pilot Training
- 3. Avoid Electric & Unknown Engines in Early Expansion

STRATEGIC CONCLUSION

- Adopt a safety-first entry strategy by selecting proven engine technologies and reducing exposure to high-risk weather conditions to protect capital and lives.