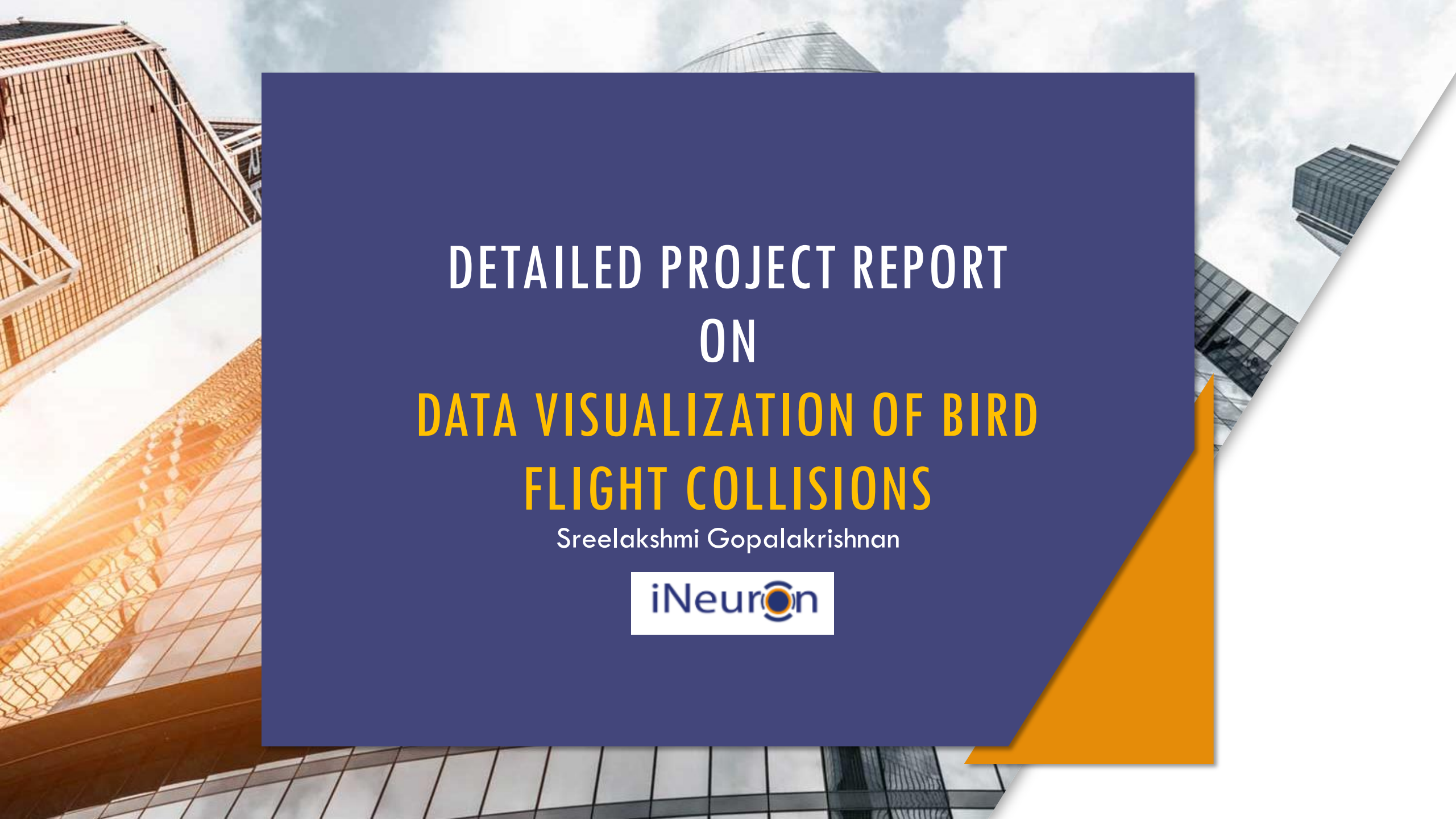

DETAILED PROJECT REPORT
ON
DATA VISUALIZATION OF BIRD FLIGHT COLLISIONS

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iNeuron

TABLE OF CONTENTS

OBJECTIVE

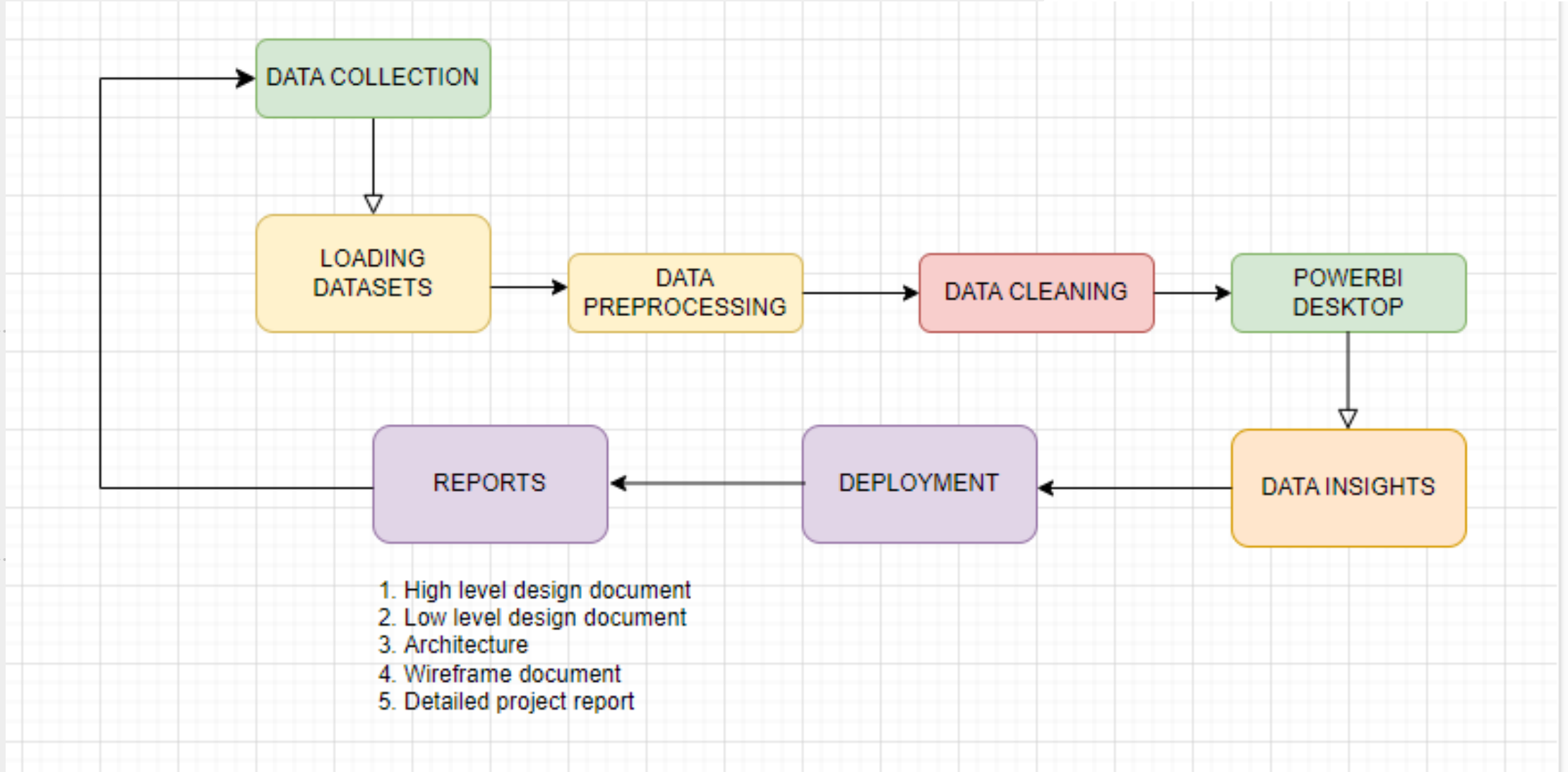
1.To assess the influence of bird strike on the aircraft structure and analyze the accidents occurred at various airports and for airlines.

2.To examine the impact of flight at various altitude, phases of flights and aircraft sizes.

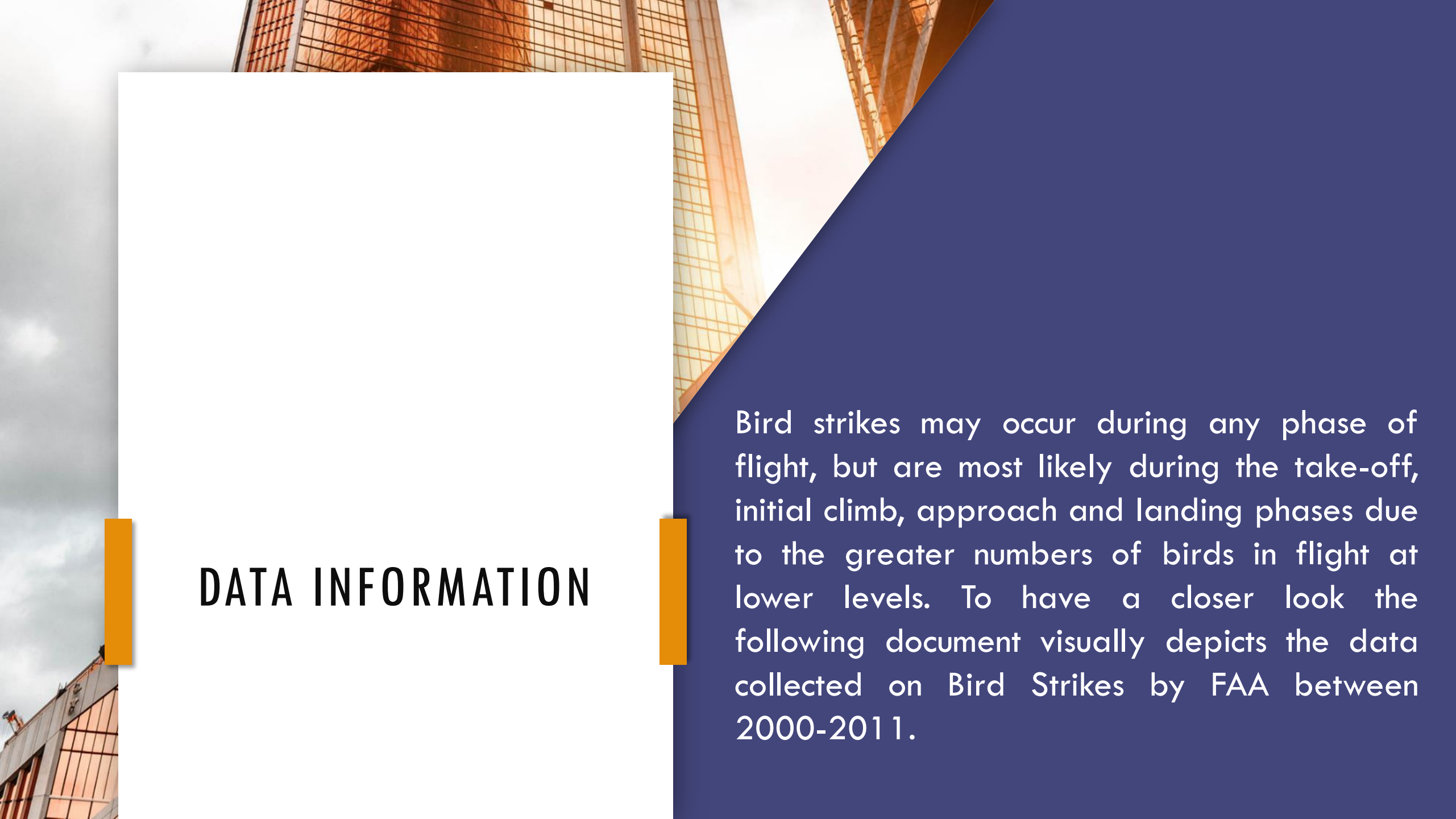
PROBLEM STATEMENT

Bird Strike can be a significant threat to aircraft safety. For smaller aircraft, significant damage are caused to the aircraft structure and all aircraft. They are vulnerable to the loss of thrust and results in the ingestion of birds into engine air intakes causing several fatal accidents.

ARCHITECTURE



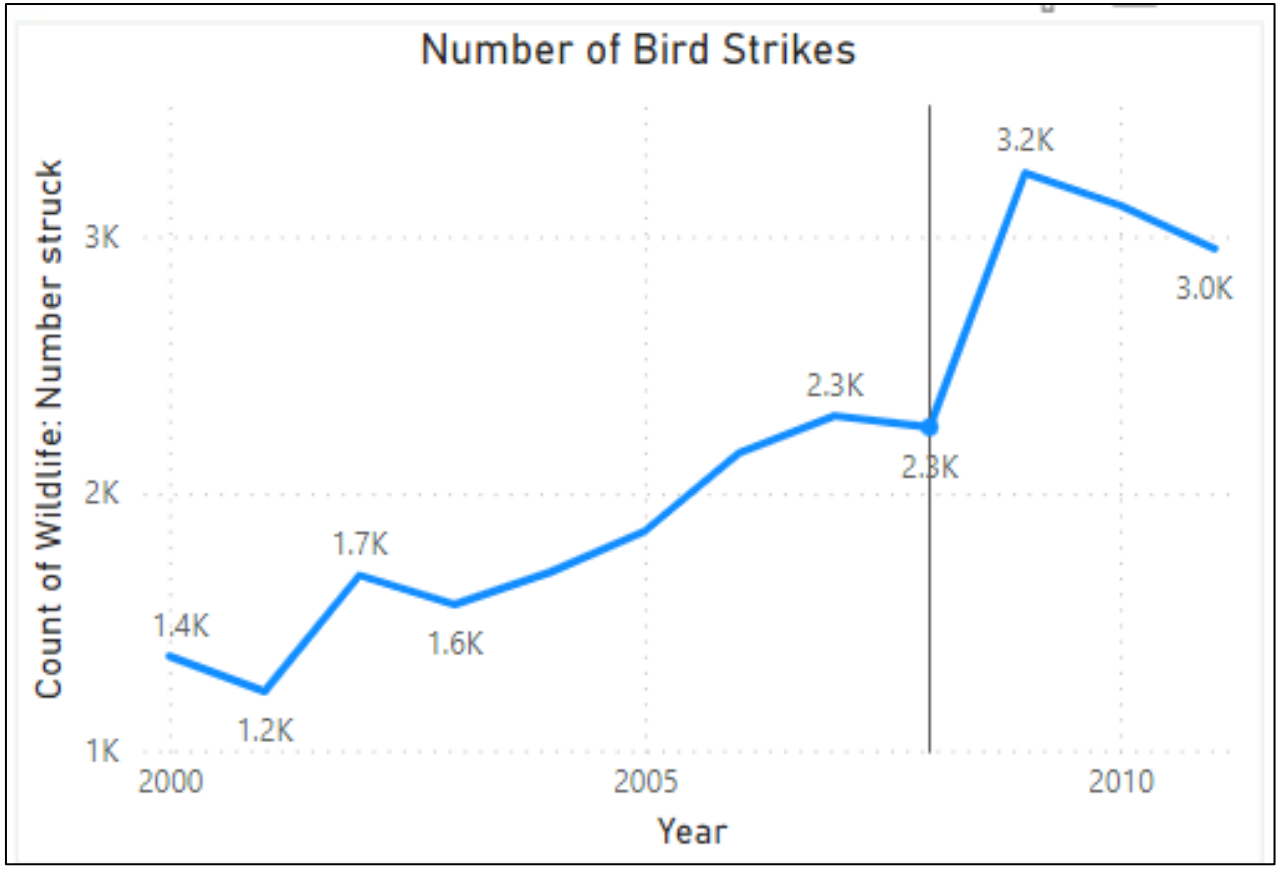
1. High level design document
2. Low level design document
3. Architecture
4. Wireframe document
5. Detailed project report



DATA INFORMATION

Bird strikes may occur during any phase of flight, but are most likely during the take-off, initial climb, approach and landing phases due to the greater numbers of birds in flight at lower levels. To have a closer look the following document visually depicts the data collected on Bird Strikes by FAA between 2000-2011.

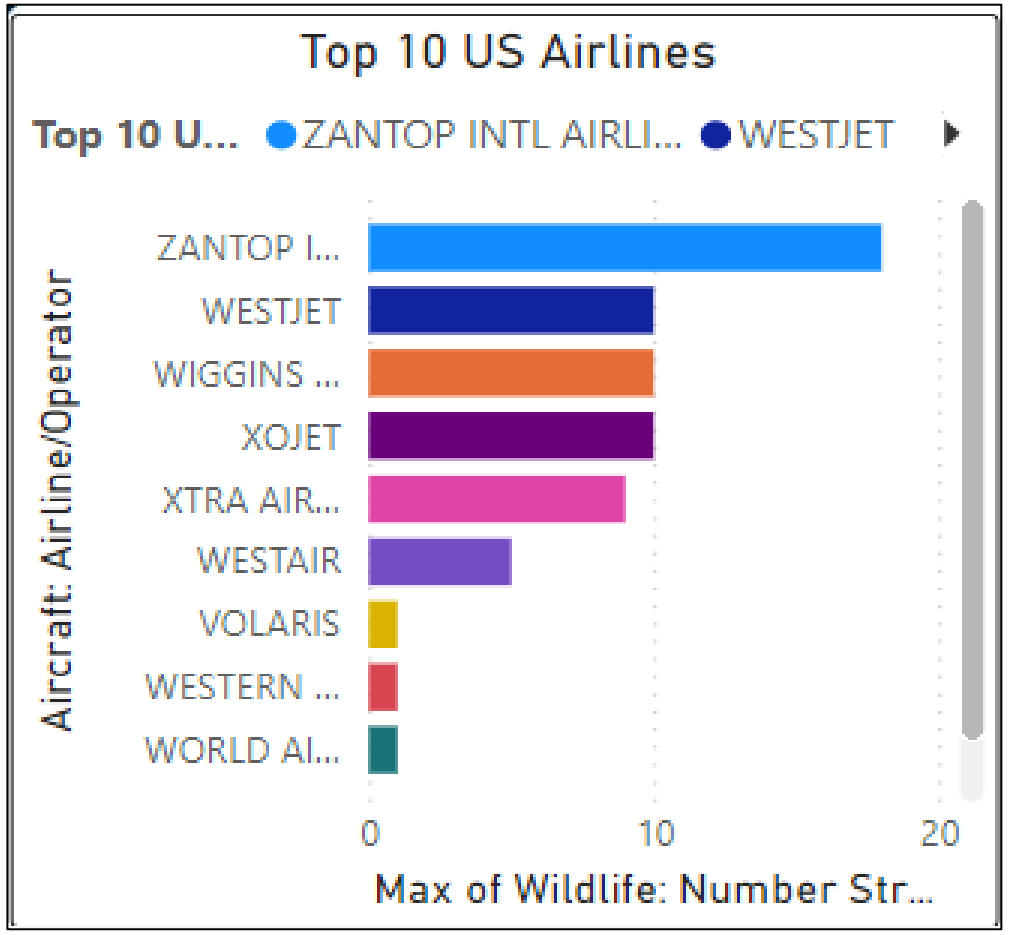
DATA INSIGHTS



1. Number of Bird Strikes in a year with a count of strikes

- It is observed that in the year between 2005-2010, the maximum number of bird strikes are reported(2.3K to 3.0K).
- The trend reported a peak of 3.2 K in bird strikes in the year 2009 causing severe casual accidents.

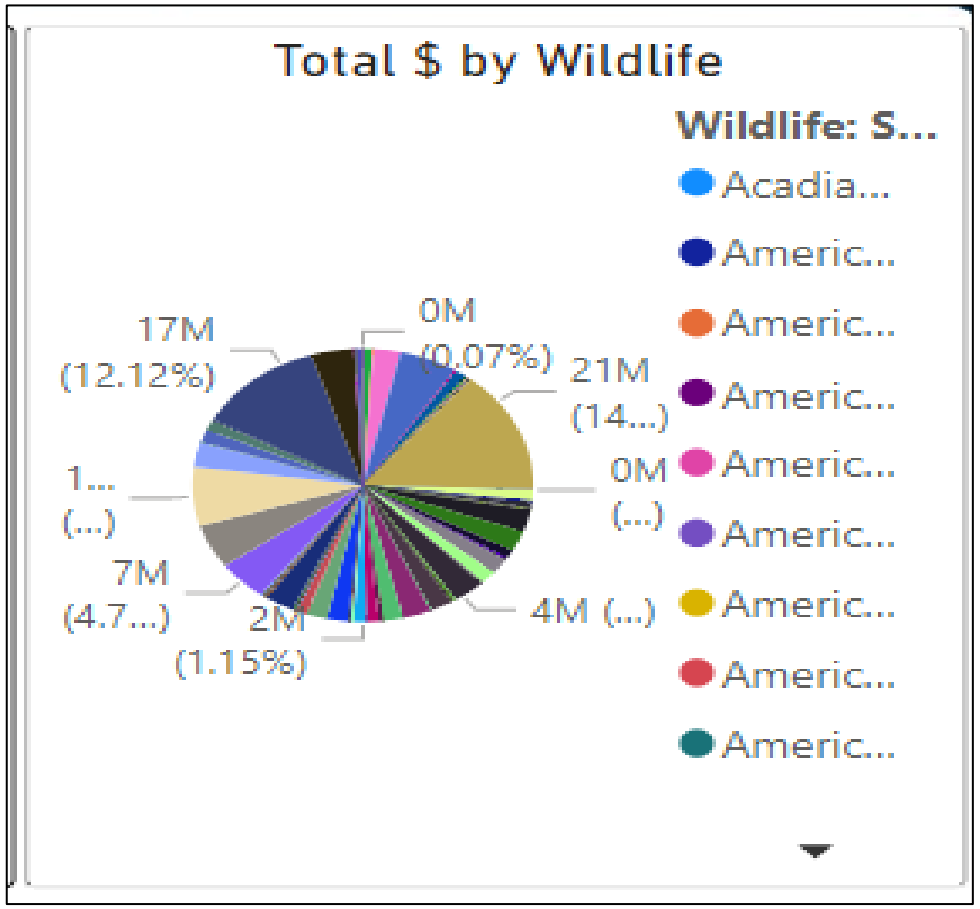
DATA INSIGHTS



- Zantop Airlines reported a maximum number of bird strikes and posed a significant threat to the aircraft structure.
- World Airlines reported a minimum number of bird strikes.

2. Top 10 US Airlines

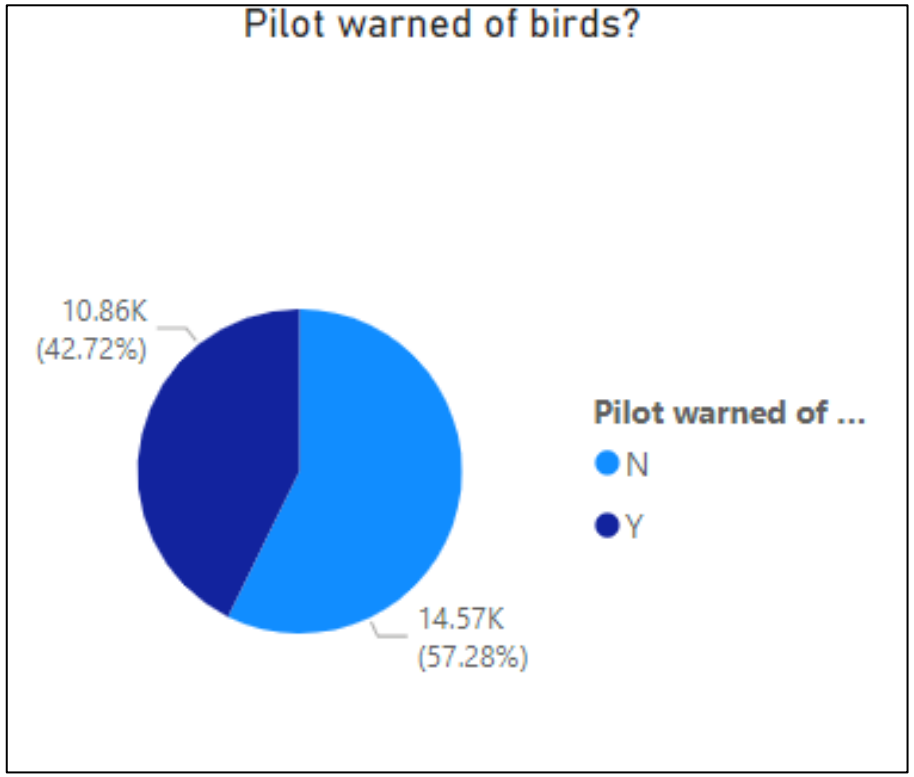
DATA INSIGHTS



- Maximum cost of 21 Million was suffered with Wildlife - Canada goose.
- Minimum cost of 0.05 Million was suffered with Redhead wildlife species.

3. Variation of Total cost vs Wild bird species

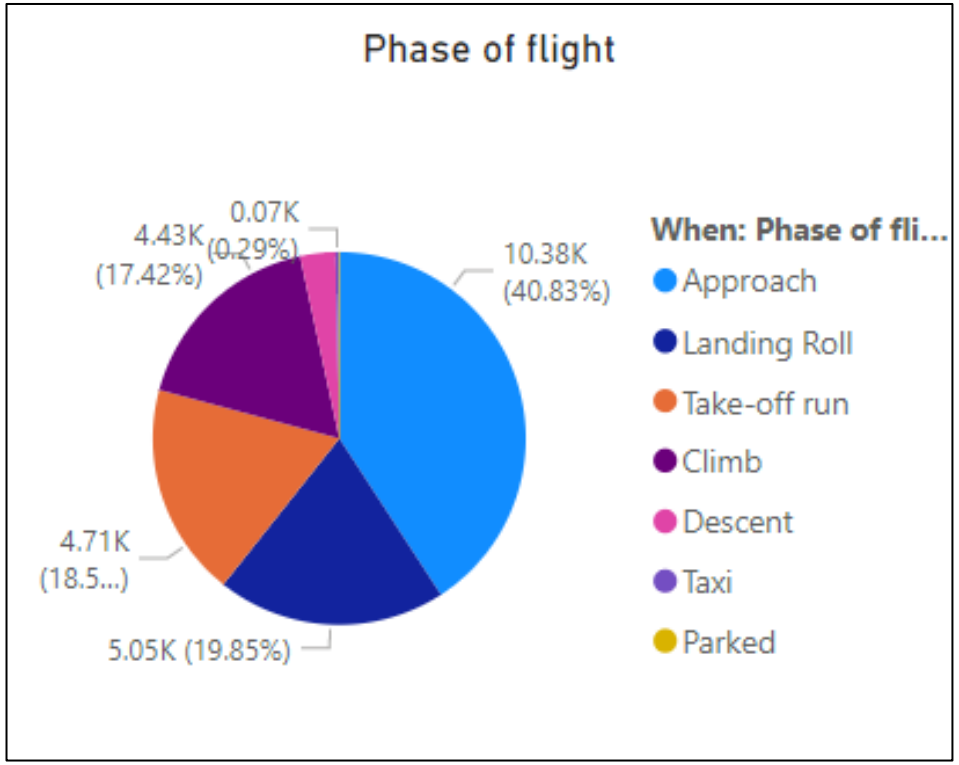
DATA INSIGHTS



- 57.8% of the pilots were warned of bird strikes and 42.7% were not warned for bird strikes.

4. Pilots warned of bird strikes

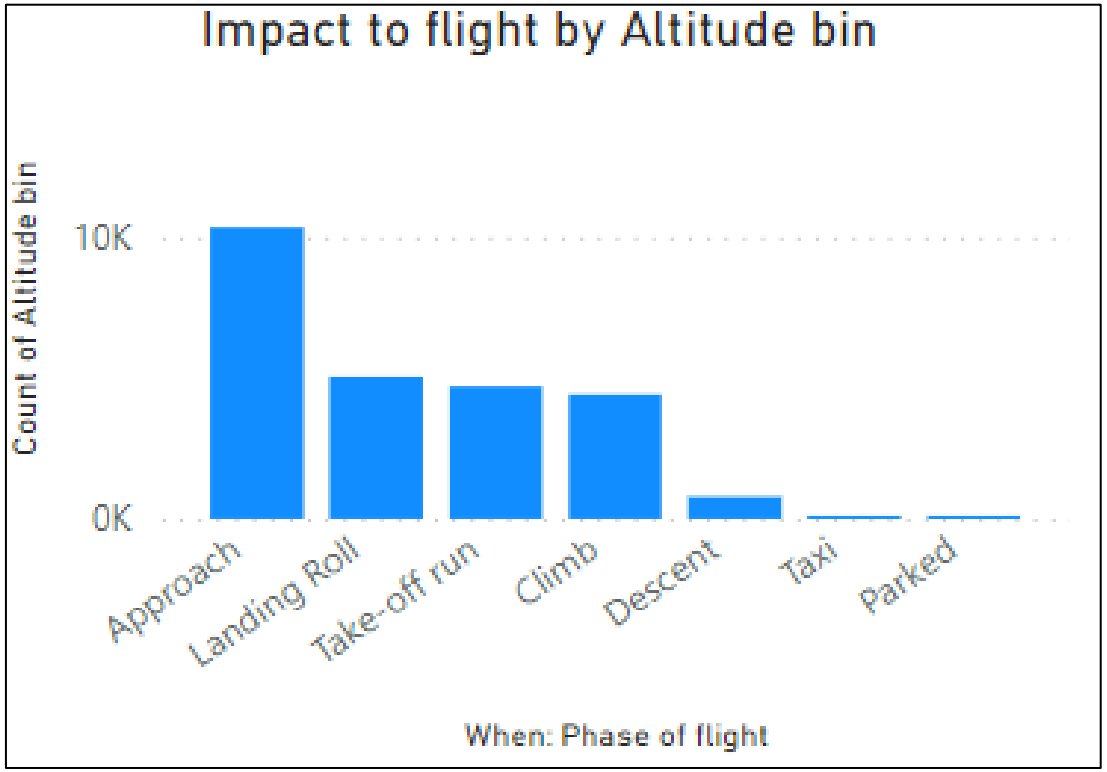
DATA INSIGHTS



- Bird strikes are most likely during the take-off, initial climb, approach and landing phases due to the greater numbers of birds in flight at lower levels (19.85% at approach position).

5. Variation of phase of flight with altitude

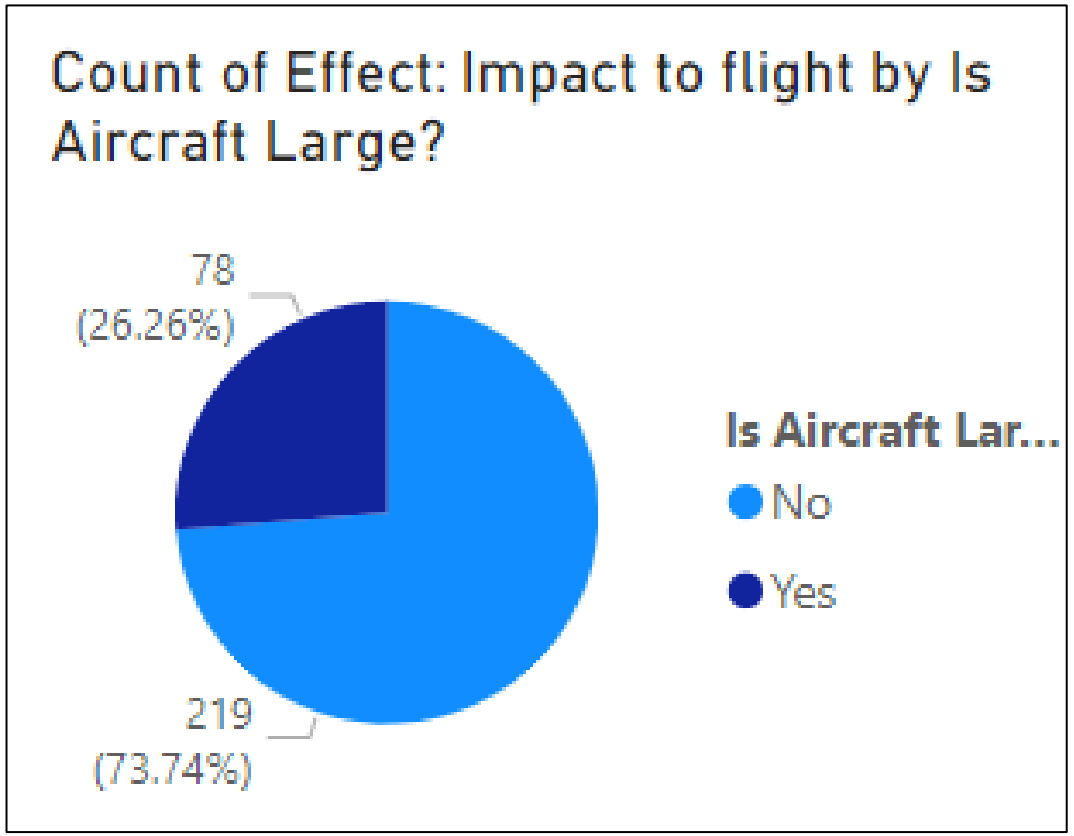
DATA INSIGHTS



- Bird strikes are maximum for the at approach position due to the greater numbers of birds (10K feet).
- Least for Taxed or parked position

6. Variation of Impact to flight with altitude

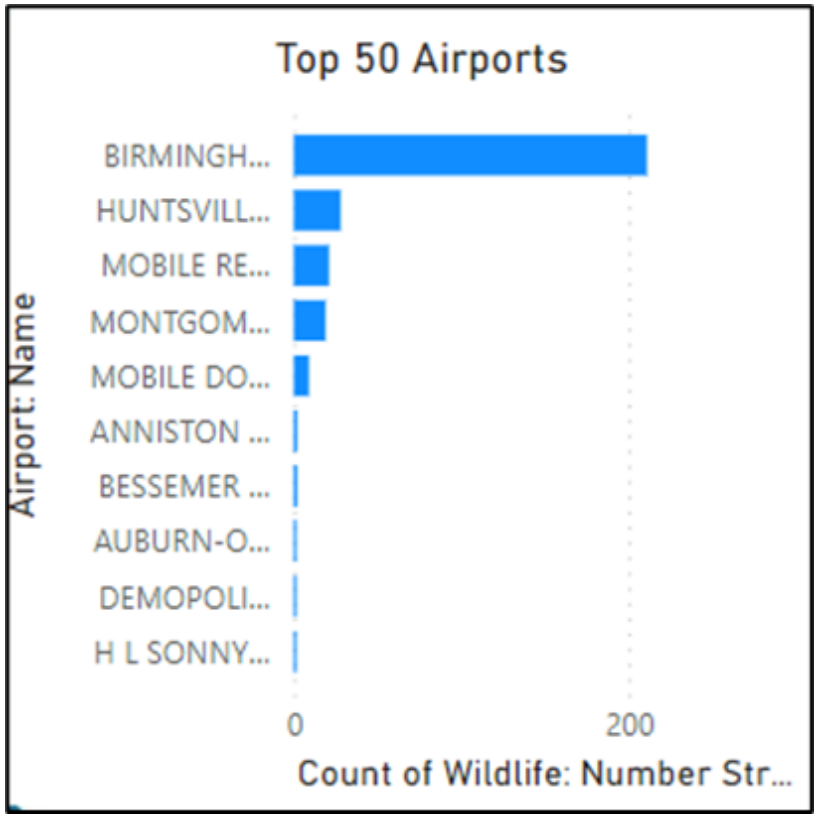
DATA INSIGHTS



7. Variation of flight impact to aircraft size

- Impact to flight is maximum for smaller aircrafts(73.74%).
- Loss of thrust due to ingestion of birds into engine air intakes.
- Least for larger aircrafts(26.26%).
- Larger aircrafts have design features that ensures shut-down after "ingesting" a bird weighing up to 1.8 kg.

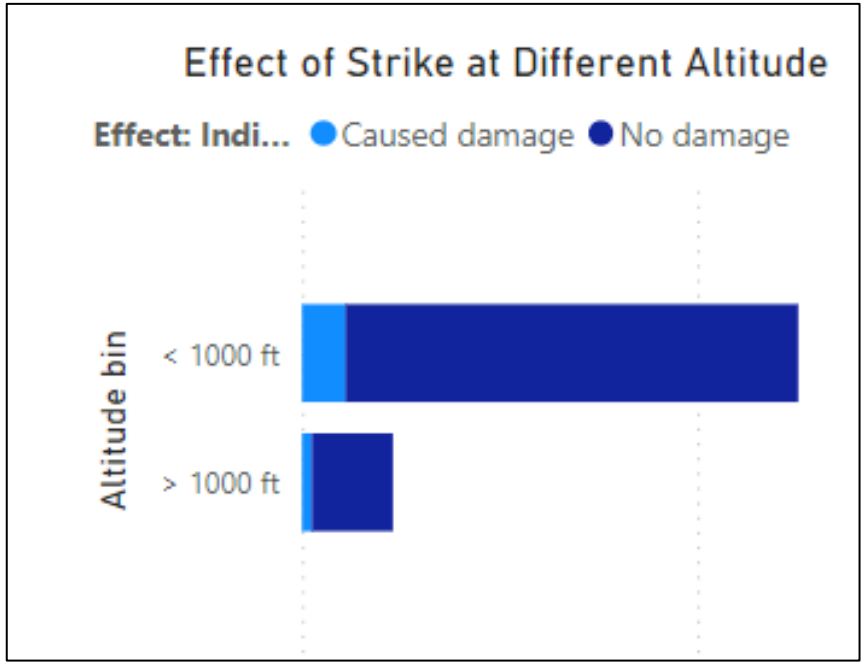
DATA INSIGHTS



8. Top 50 Airports

- Maximum bird strike – Birmingham Shuttlesworth (200)
- Airport-Habitat to birds - trees, brush, and standing water in the fence.
- Least affected-H L Sonny Callahan airport.

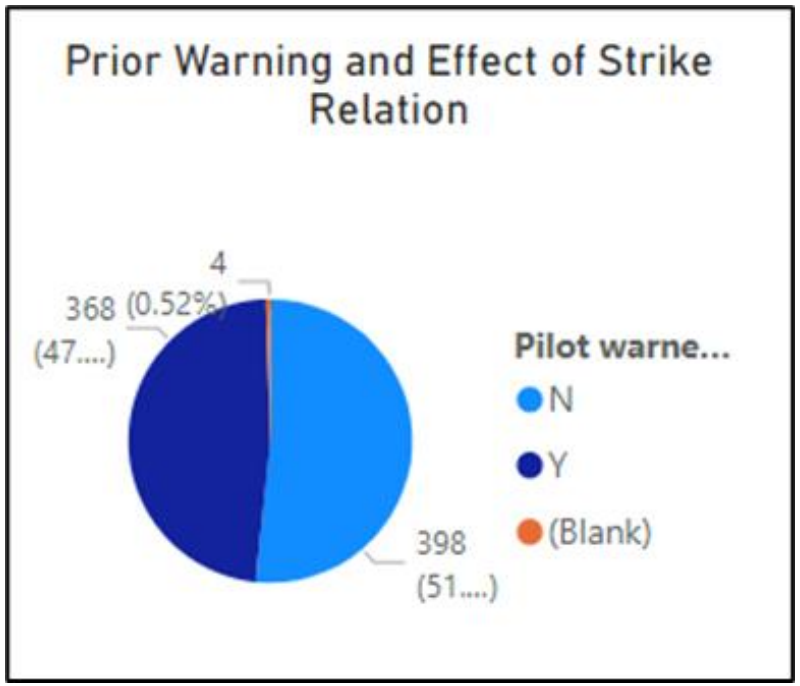
DATA INSIGHTS



- Altitude < 1000 ft – caused major damage- Ducks and geese at high concentrations are observed.
- Altitude > 1000 ft – caused minor damage.

9. Effect of strike at different altitude

DATA INSIGHTS

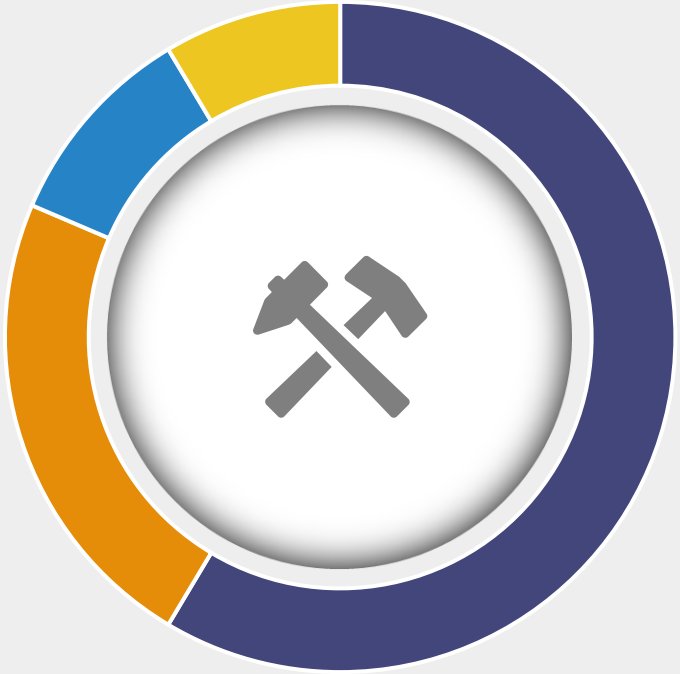


- 47% warned of bird strike.
- 51% not warned of bird strike.

10. Pilot warning and effect of strike

KPI

1. Variation of wildlife size by species
2. Bird strikes in a year
3. Top 10 US Airlines
4. Variation of Total cost vs Wild bird species
5. Variation of phase of flight with altitude
6. Variation of Total cost vs Wild bird species



SOLUTION

https://app.powerbi.com/groups/me/reports/a7d2882a-03a0-4e6b-9695-ce20e21615bb?ctid=1c87fdb6-051d-43a4-a73c-ad6de4fac5b2&pbi_source=linkShare
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CONCLUSIONS

1. Significant damages are caused for smaller aircraft, and it impacted majorly for engine air intake structures.

2. Bird strikes are most likely during the take-off, initial climb, approach and landing phases due to the greater numbers of birds in flight at lower levels.

3. Maximum cost of 21 Million was suffered with Wildlife - Canada goose(large size and tendency to fly in flocks may exacerbate their impact) and minimum cost of 0.05 Million was suffered with Redhead wildlife species.

REFERENCES

DATA SOURCE - HTTPS://DRIVE.GOOGLE.COM/DRIVE/FOLDERS/1HLKL5HO4XG9RIJL8XES6QUAJWBTDSX6? USP=SHARING