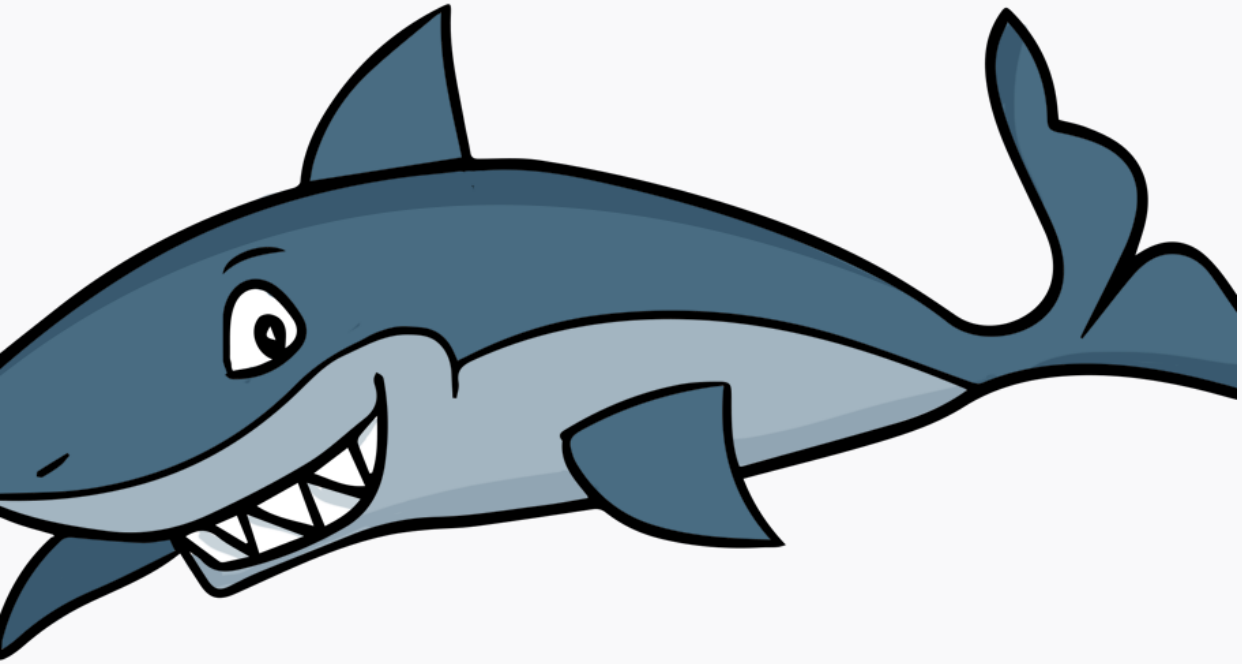
Shark Attacks

Presented by Dickens

Agenda

- Motivation & Problem Statement
- Dataset
- EDA Overview
- Data Cleaning
- Analytics
- Summary of Findings
- Conclusion

Motivation & Problem Statement



- Shark related dataset
- Analysing shark attack patterns
- Relating data to overall assumptions

Dataset Overview

Shape of Data Set:

- (7058, 23)

Overall country distribution

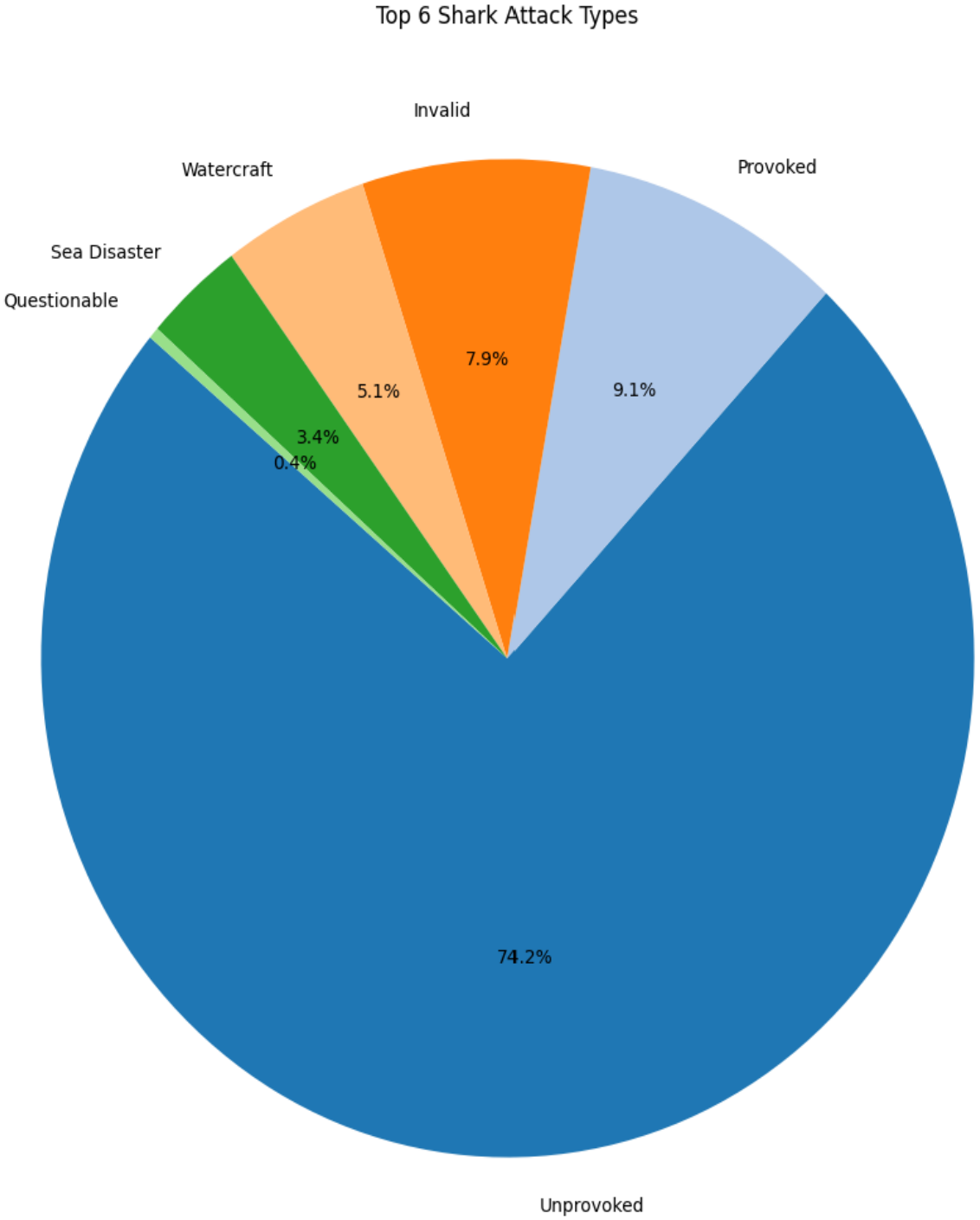
- Unevenly distributed

Main Variables

- Country
- Type
- Fatality
- Gender
- Species

See link here

EDA Overview

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<Axes: xlabel='year'>
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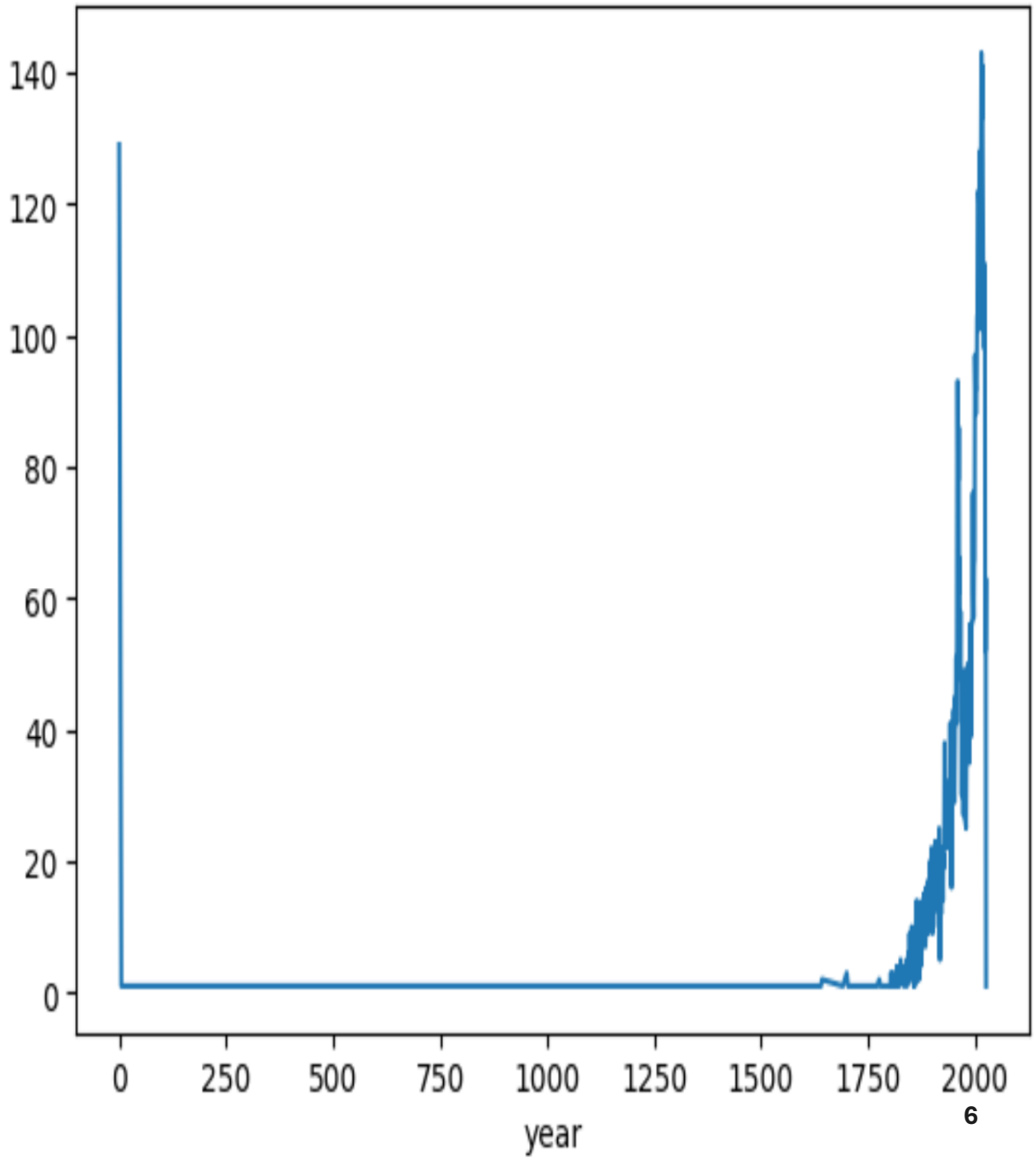
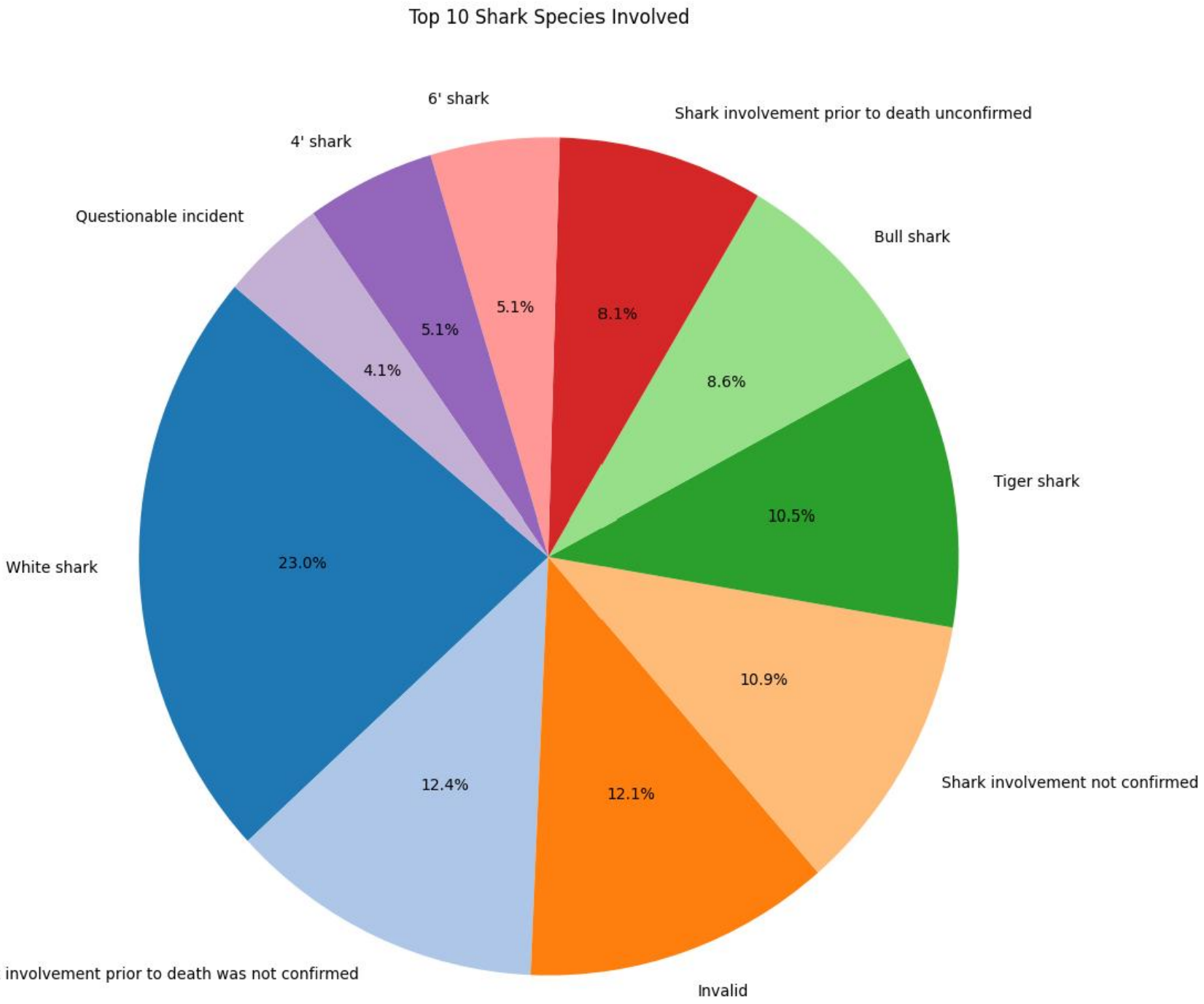



Top 10 Shark Species Involved
6' shark
Shark involvement prior to death unconfirmed
4' shark
Questionable incident
Bull shark
5.1%
5.1%
8.1%
4.1%
8.6%
Tiger shark
10.5%
White shark
23.0%
10.9%
Shark involvement not confirmed
12.4%
12.1%
Shark involvement prior to death was not confirmed
Invalid

The following assumptions were interesting to follow:

Hypothesis 1: Australia has the highest number of shark attacks.

Hypothesis 2: Australia has the highest number of shark related deaths.

Hypothesis 3: Americans will have the highest count of shark related attacks due to provocation.

Hypothesis 4: Men’s fatality rate due to shake related attacks, is higher than that of women.

Dataset Cleaning

Missing values:

- Filled columns using appropriate imputation.

Duplicates:

- 3 rows dropped with unresolved issues

Columns:

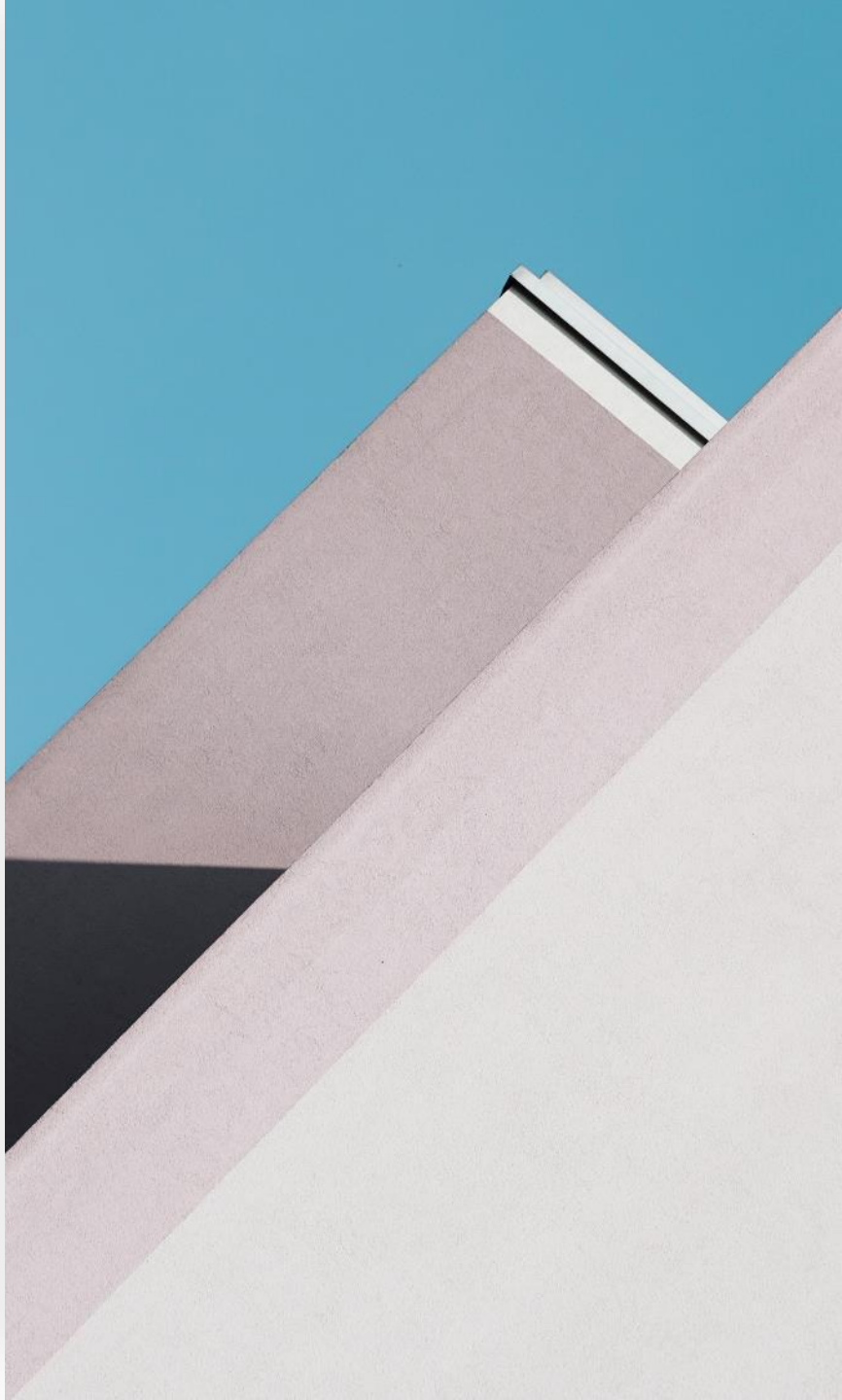
- Drop columns not relevant for analysis.

Resulting features:

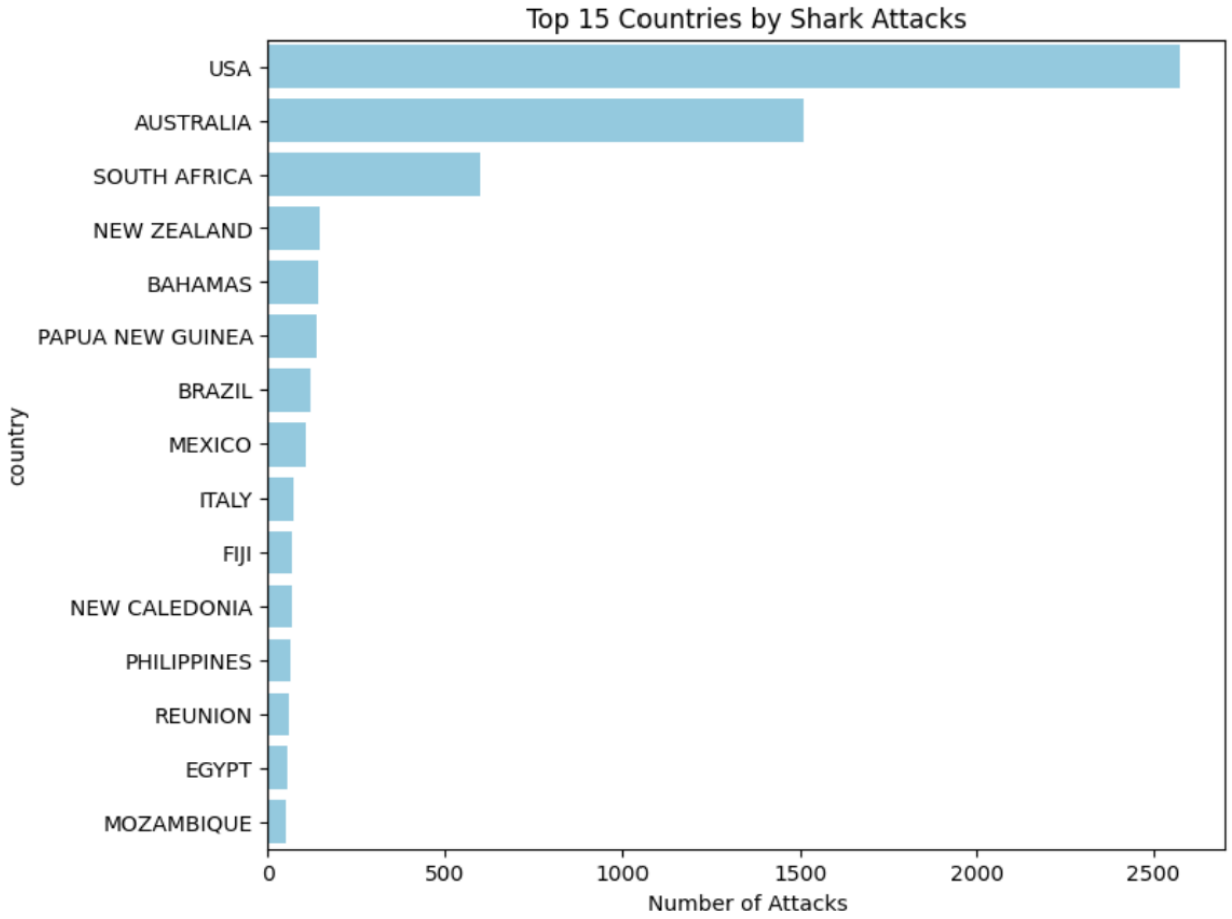
- The dataset only has 13 columns (7055, 13) from 23.

Data Analytics

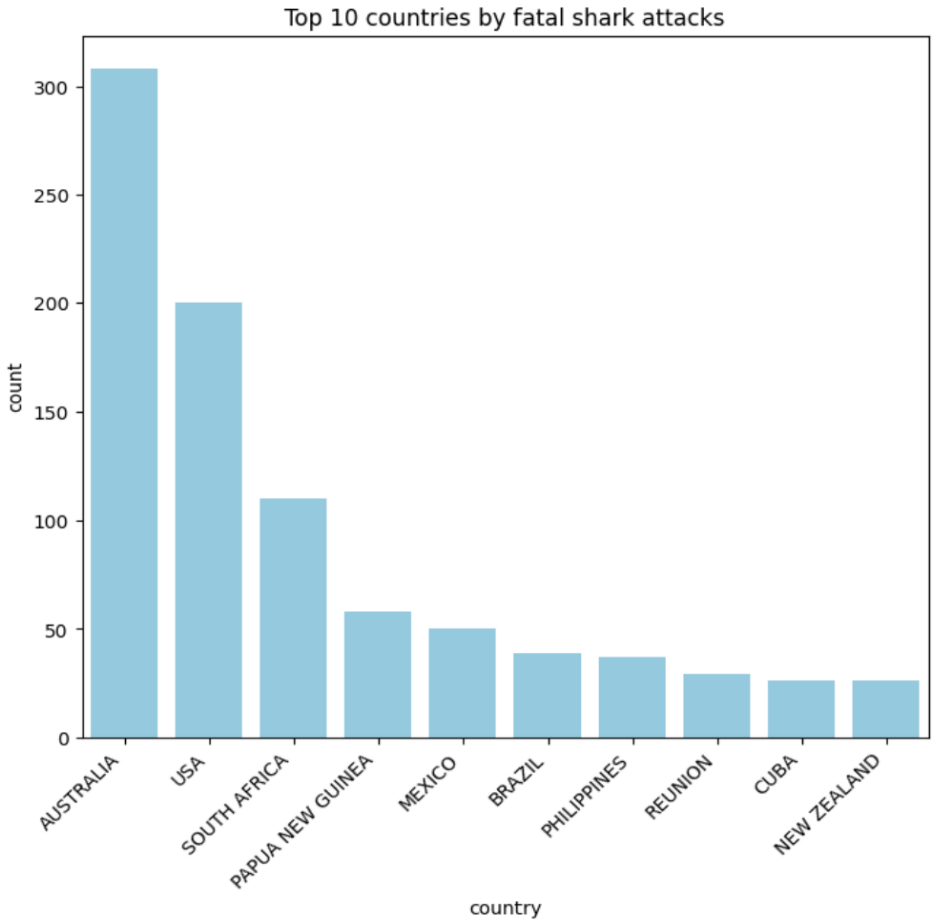
- Mostly used visual plots
- In some cases groupby was used



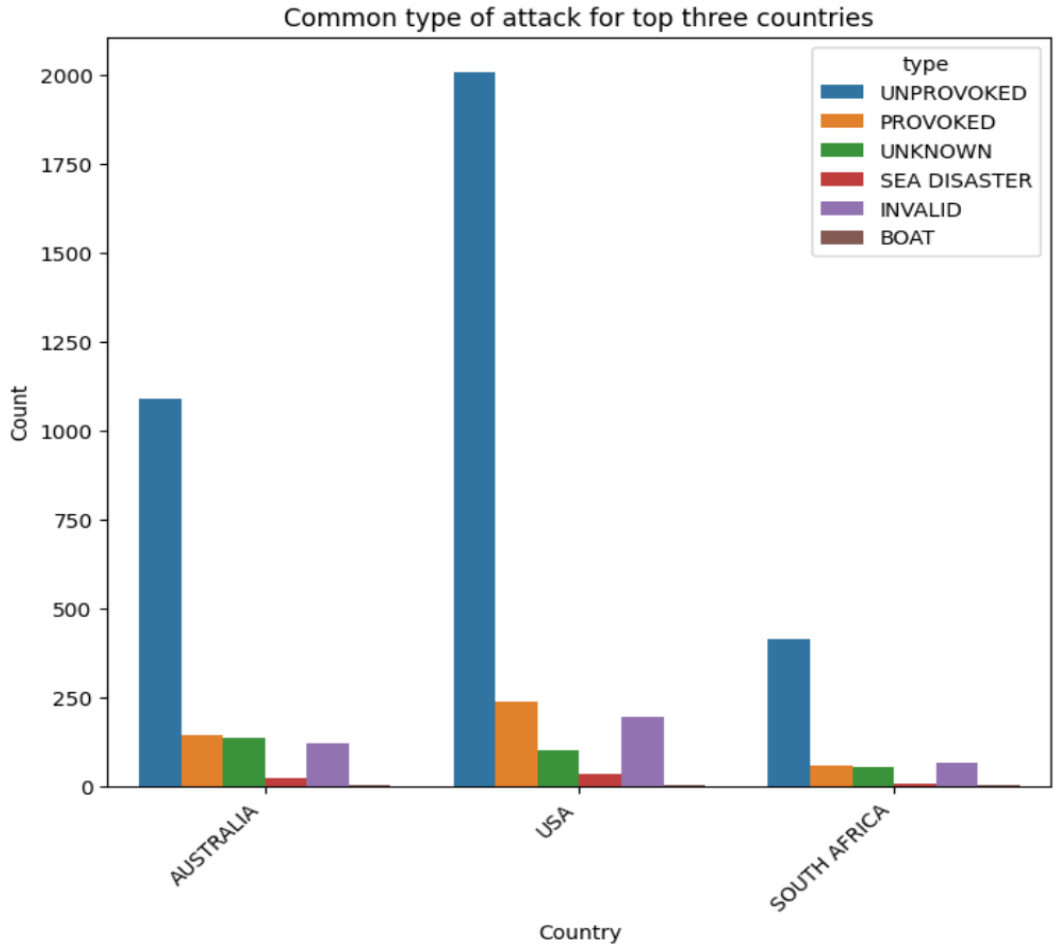
Hypothesis 1



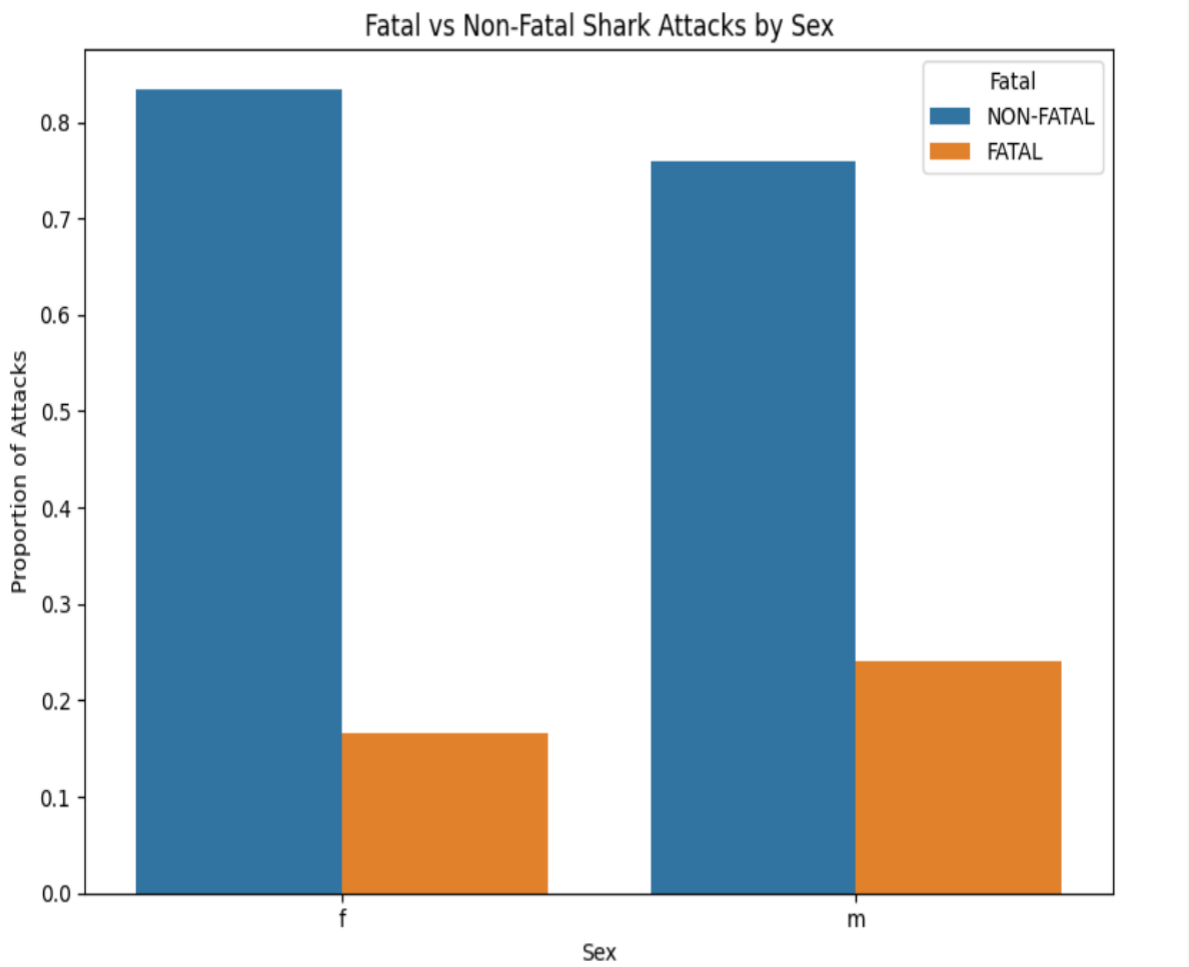
Hypothesis 2



Hypothesis 3



Hypothesis 4

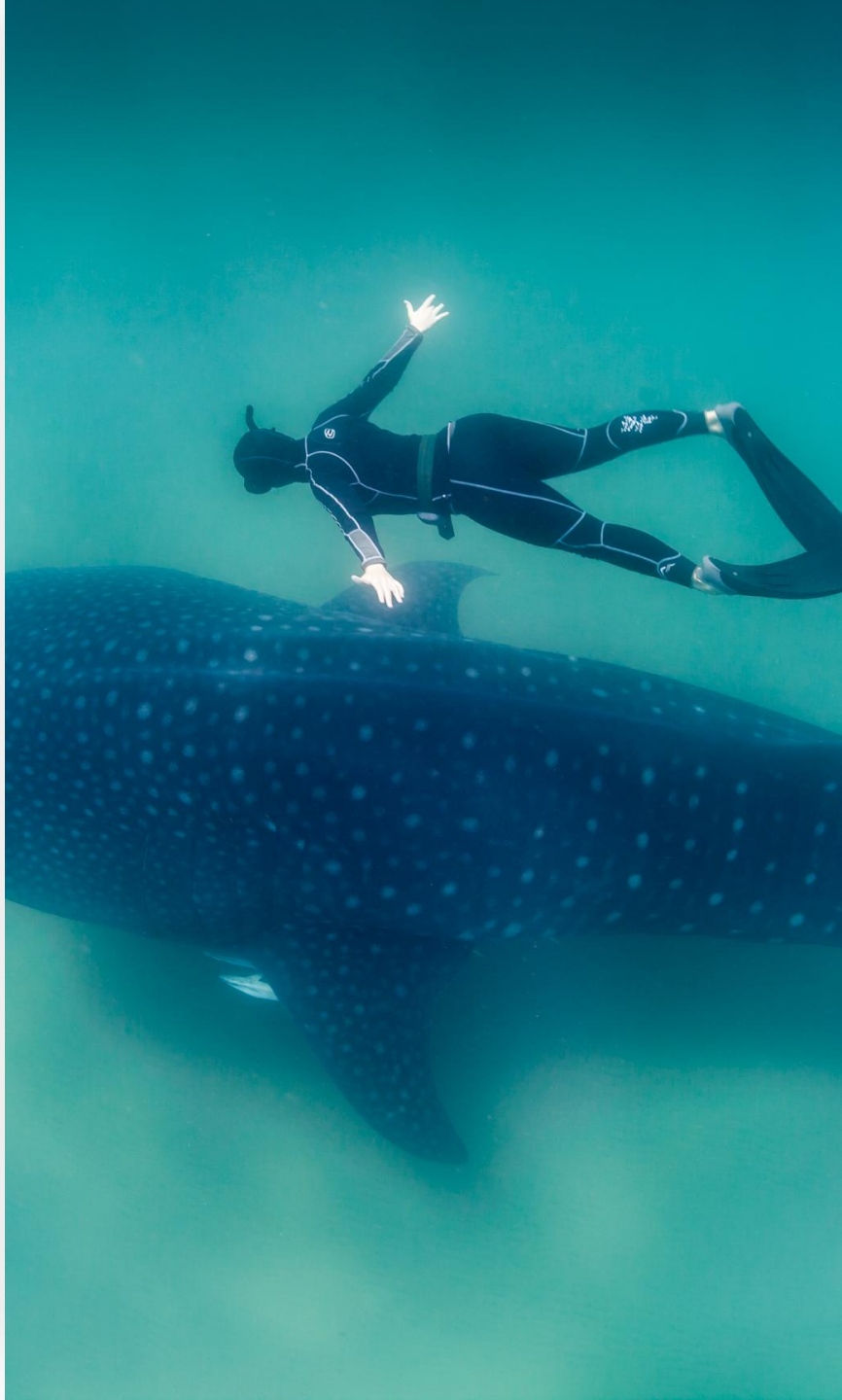


Summary of Findings

- H1: America and not Australia, has the highest number of shark related attacks.
- H2: Australia is the location with the highest number of deaths due to shark attacks.
- H3: America has the highest record of shark related incidents by provocation.
- H4: Men definitely find ways to live shorter lives; they have the highest record of shark related deaths.

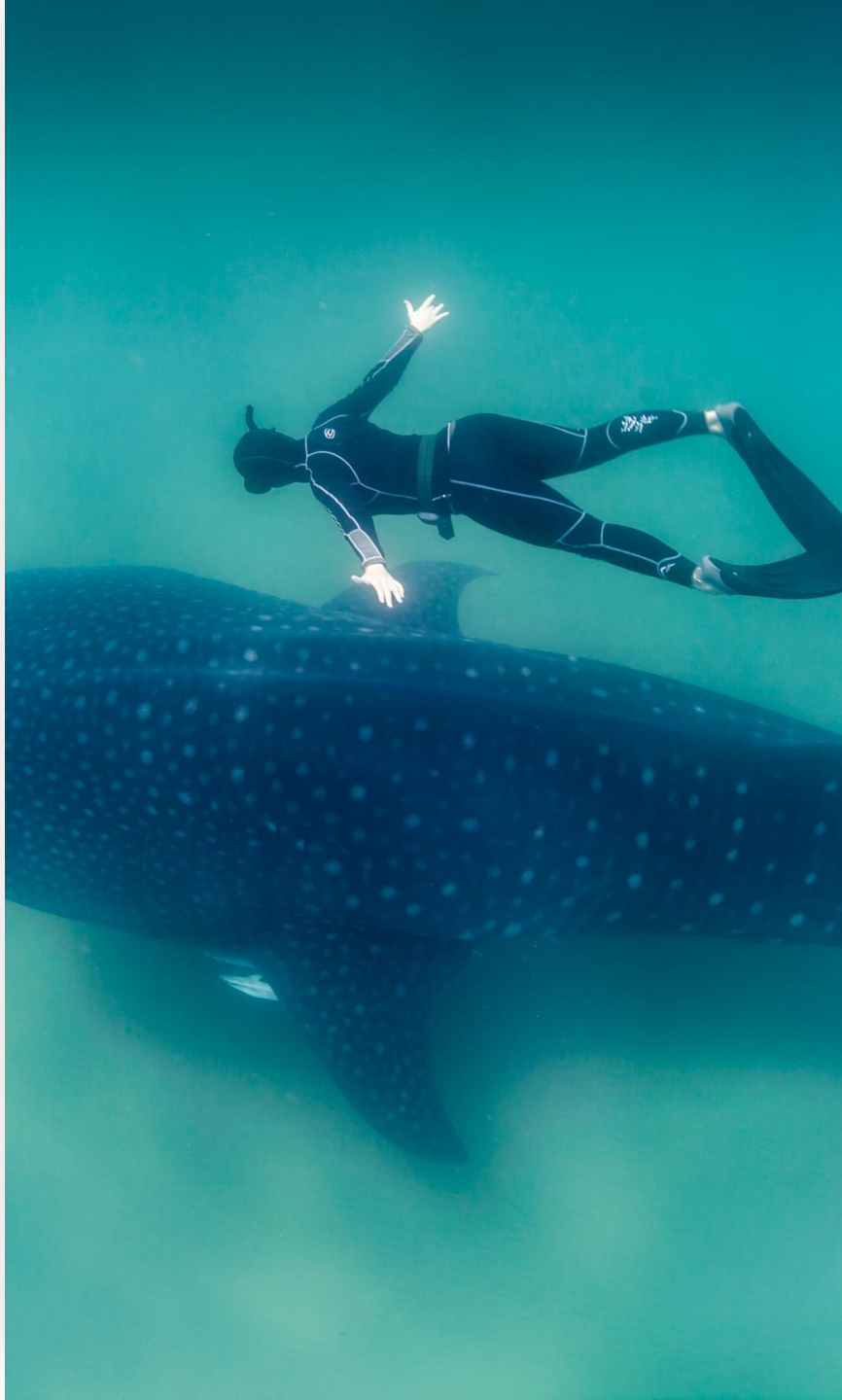
Conclusion (of findings)

- Shark attack risk is not evenly distributed across geography, behaviour, or demographics.
- While the United States experiences the most shark attacks overall, Australia presents a higher fatality risk, meaning that where and how humans interact with marine environments matters more than the number of encounters.
- Additionally, human behaviour plays a critical role in fatal outcomes, and a small number of shark species, especially the Great White, account for the largest share of incidents.



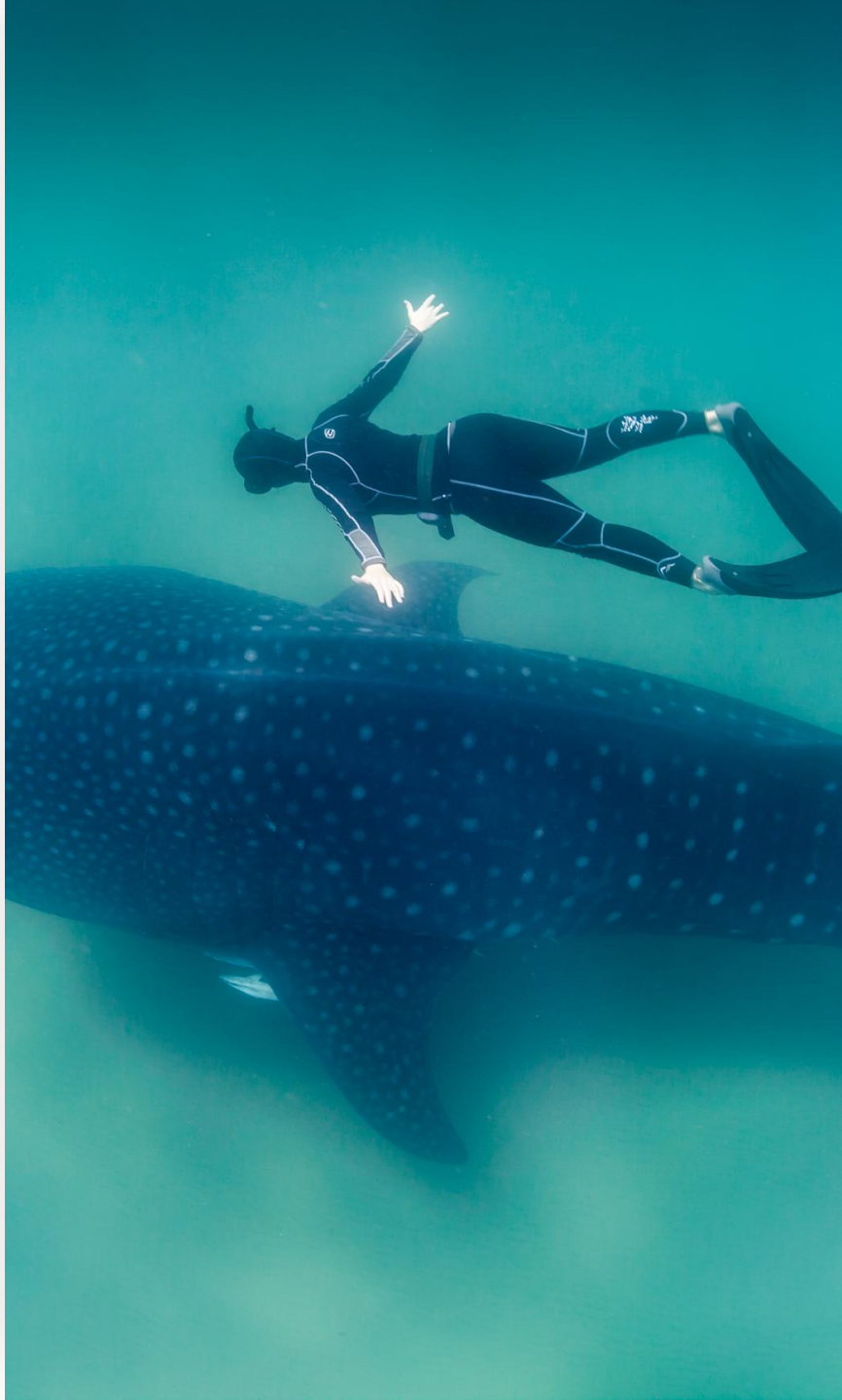
Application to Financial Domain

- **Risk frequency does not equal risk severity**: High-frequency events (like U.S. shark attacks) are not always the most damaging, highlighting the importance of accounting for tail risk in financial models.
- **Geographic context shapes outcomes**: Just as Australia shows higher fatality risk, financial losses vary significantly by region due to market structure, regulation, and infrastructure differences.



Application to Financial Domain

- **Human behaviour amplifies risk**: Provoked shark attacks parallel speculative and high-risk financial behaviour, demonstrating how voluntary actions can increase exposure and losses.
- **Risk is uneven across participants**: Higher male fatality rates reflect behavioural risk-taking, similar to how investor profiles influence portfolio volatility and loss potential.
- **Losses are often concentrated**: A small number of shark species drive most attacks, mirroring how concentrated assets or counterparties can dominate financial risk.



Thank You!