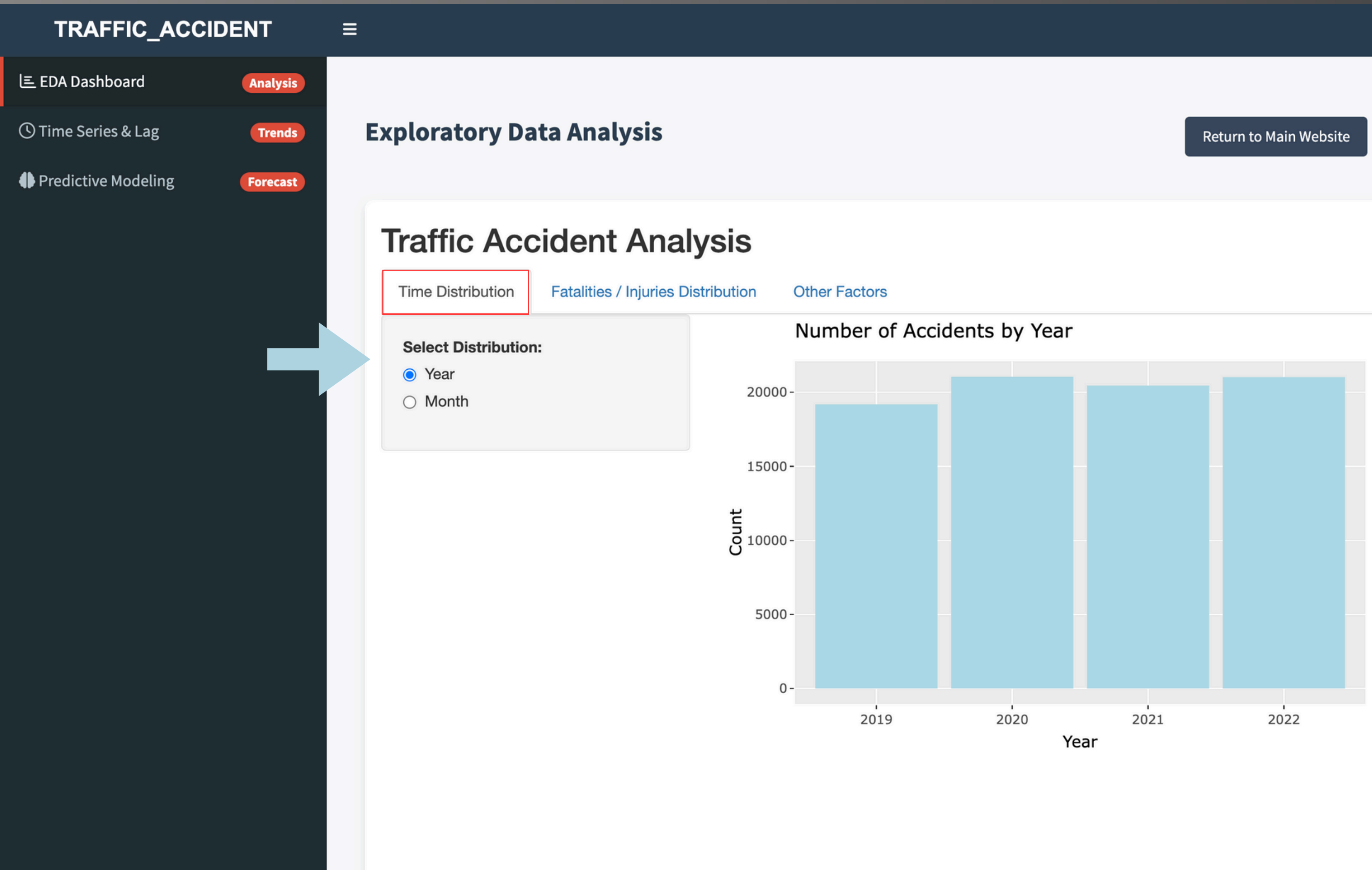# Thailand Traffic Accident–User guide

Exploratory Data Analysis – Overview

This page serves as the "landing page" that displays a summary of traffic accidents through temporal visualizations. This visualization UI helps:
(1) identify accident trends over time and (2) support further exploratory analysis on injury, fatality, and other contributing factors.
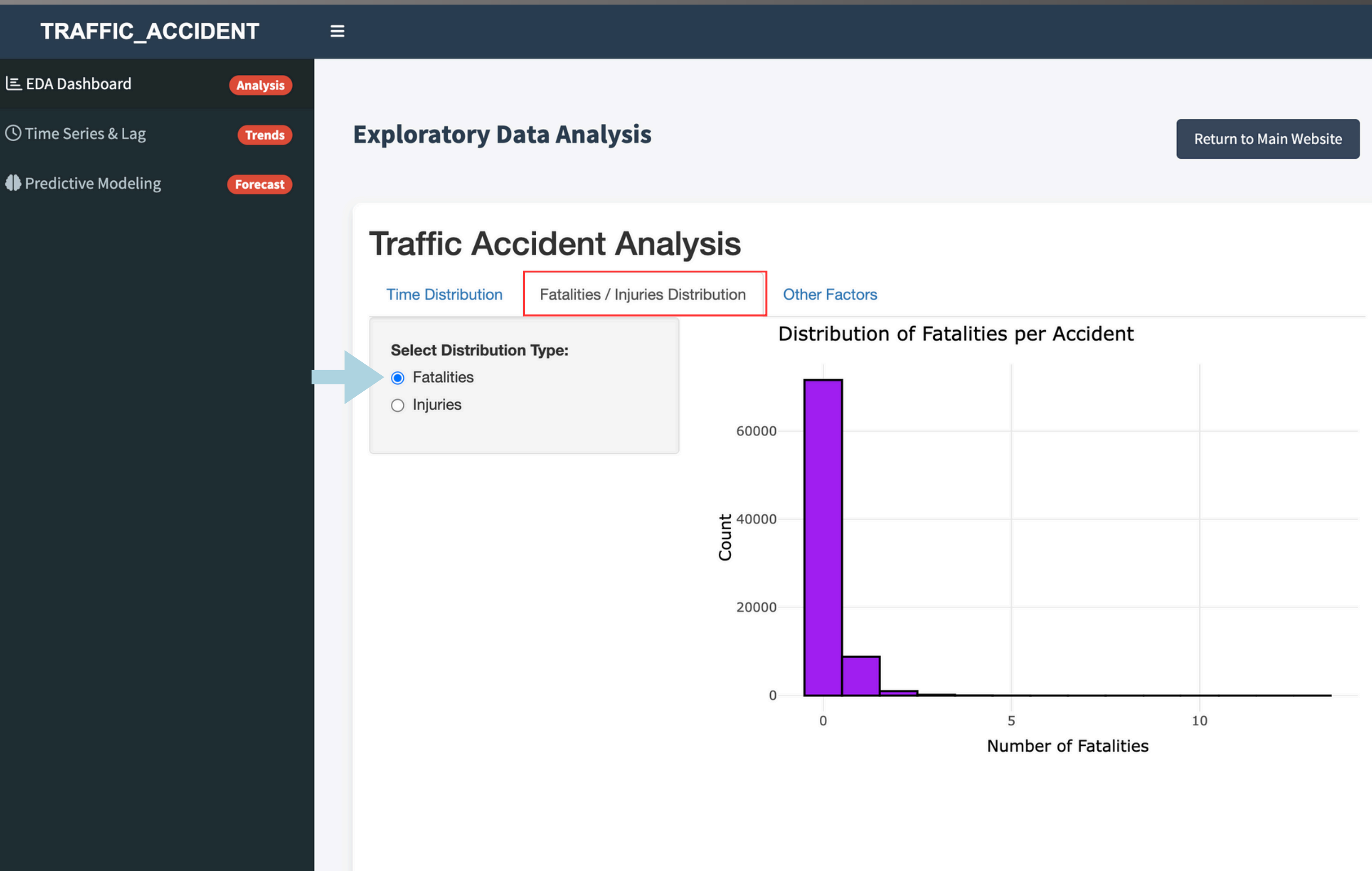

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- EDA Dashboard **Analysis**
- Time Series & Lag **Trends**
- Predictive Modeling **Forecast**

Exploratory Data Analysis

Return to Main Website

Traffic Accident Analysis

Time Distribution   Fatalities / Injuries Distribution   Other Factors

Select Distribution:
- ● Year
- ○ Month

Number of Accidents by Year

Traffic Accident Analysis Panel Options for Time-based Bar Chart:
a. Users can choose to display accident count by year or by month.
b. Once a selection is made, the bar chart updates automatically to reflect the selected distribution.
c. The default view shows the number of accidents by year from 2019 to 2022.
d. If Month is selected, users can further specify a particular year to observe monthly variations within that year.
e. The chart helps identify temporal trends, such as increases or decreases in accident frequency.

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- ▤ EDA Dashboard — **Analysis**
- ⏱ Time Series & Lag — **Trends**
- ◗ Predictive Modeling — **Forecast**

Exploratory Data Analysis

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Traffic Accident Analysis

Time Distribution | Fatalities / Injuries Distribution | Other Factors

Select Distribution Type:
- ⦿ Fatalities
- ○ Injuries

Distribution of Fatalities per Accident

Fatalities / Injuries Distribution Panel
Options for Casualty Distribution Chart:
a. Users can select between Fatalities or Injuries to visualize the corresponding distribution
b. The histogram will display the frequency of accidents with different numbers of casualties
c. The default view shows the distribution of fatalities, with most accidents having zero or one fatality
d. This chart helps understand the severity pattern of traffic accidents — whether they tend to cause death or mainly result in injury
e. Switching to Injuries allows users to explore how many people were injured in typical incidents

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- ⊟ EDA Dashboard `Analysis`
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Exploratory Data Analysis

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Traffic Accident Analysis

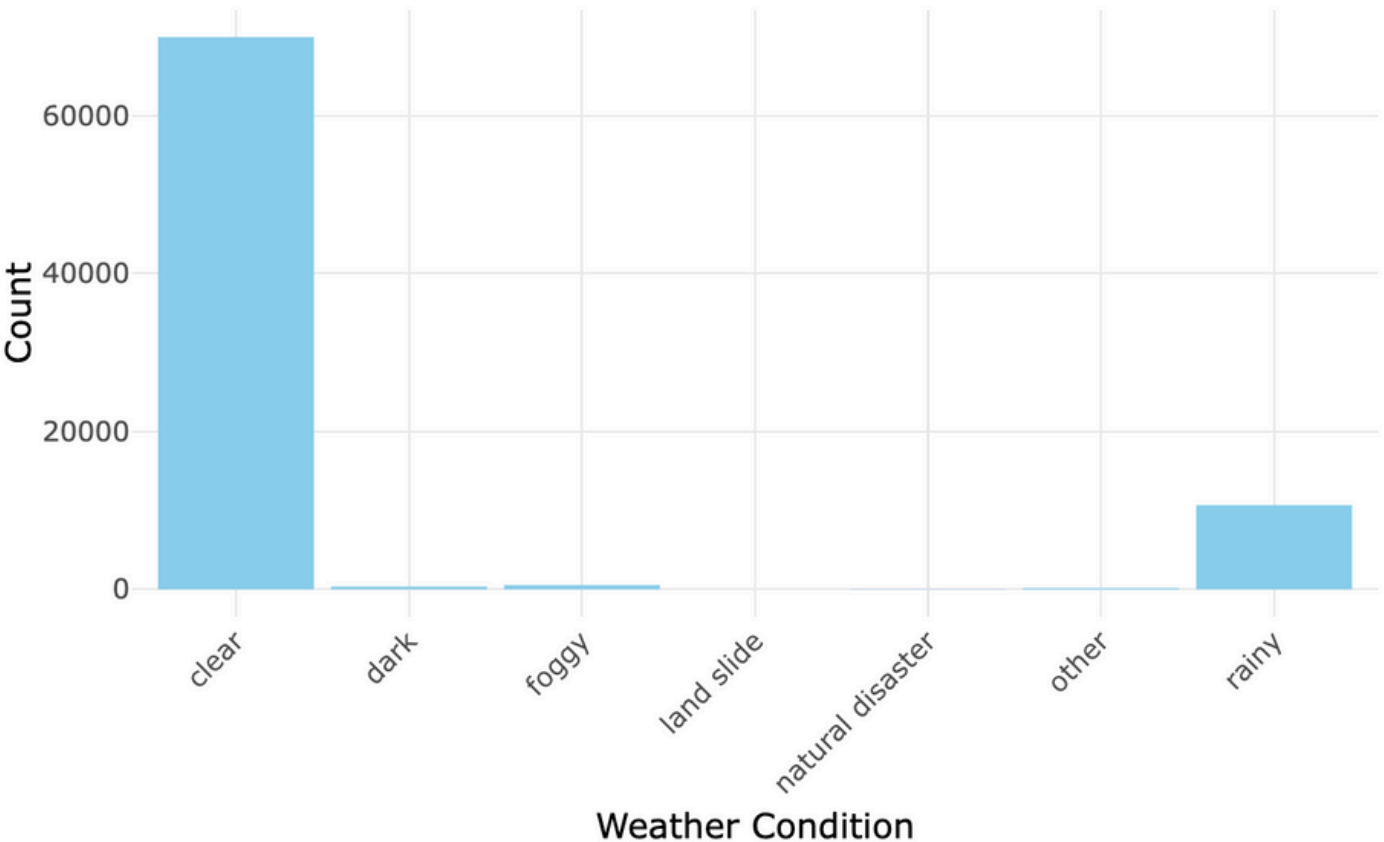Time Distribution   Fatalities / Injuries Distribution   Other Factors

Select Variable:

| Weather ▲ |

| Weather |
| Vehicle Type |
| Presumed Cause |

Number of Accidents by Weather

Count

60000

40000

20000

0

clear   dark   foggy   land slide   natural disaster   other   rainy
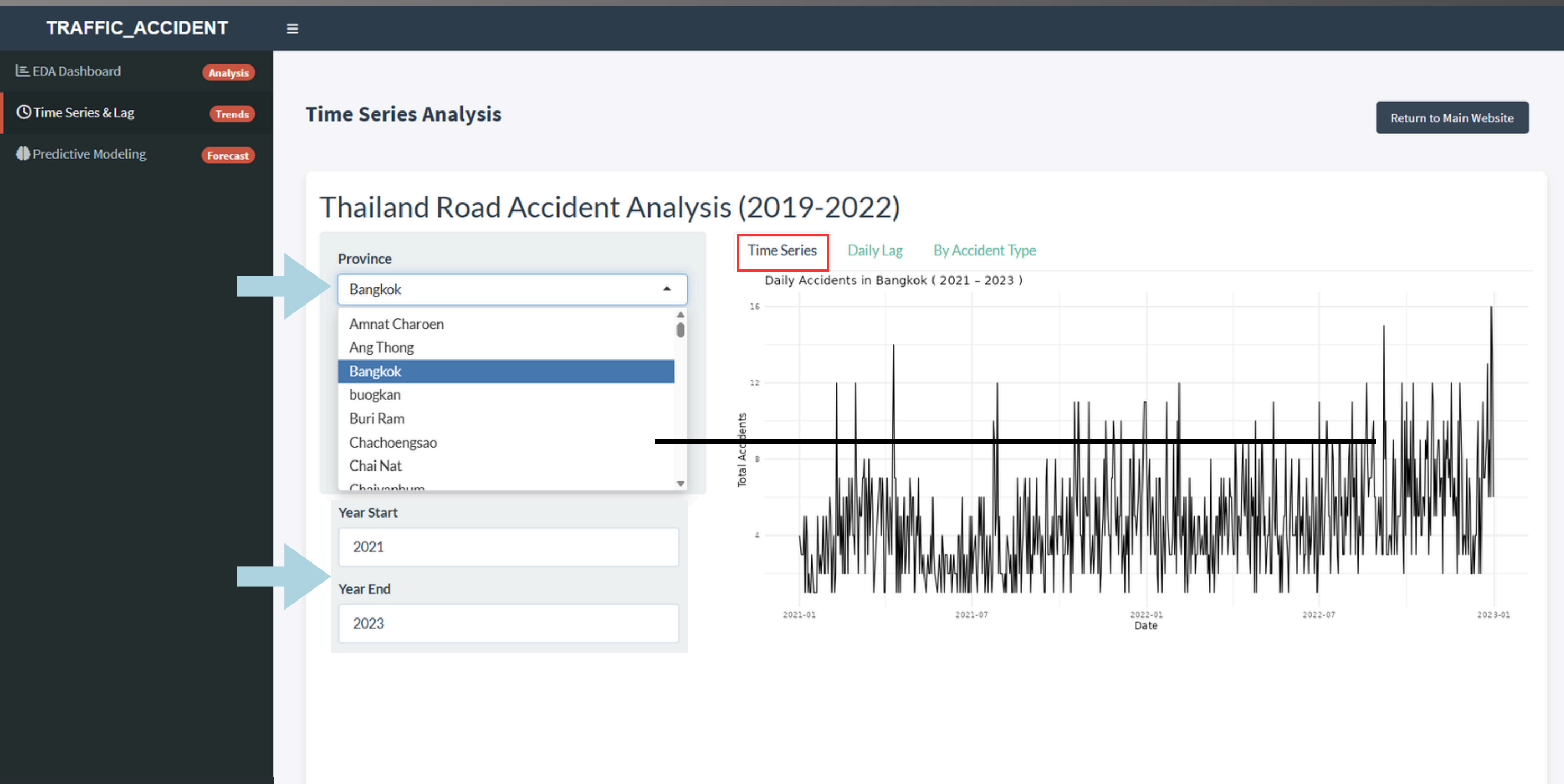
Weather Condition

Other Factors Panel

Options for External Factor Analysis:
a. Users can choose among Weather, Vehicle Type, or Presumed Cause as the variable for analysis
b. A bar chart will display the number of accidents associated with each selected factor category
c. The default view shows Number of Accidents by Weather
d. Selecting Vehicle Type allows users to analyze which types of vehicles are more frequently involved in accidents
e. Choosing Presumed Cause provides insights into common causes

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- EDA Dashboard `Analysis`
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Time Series Analysis

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Thailand Road Accident Analysis (2019-2022)

Province

| Bangkok | ▲ |

Amnat Charoen
Ang Thong
Bangkok
buogkan
Buri Ram
Chachoengsao
Chai Nat
Chaiyaphum

Year Start

2021

Year End

2023

Time Series   Daily Lag   By Accident Type

Daily Accidents in Bangkok (2021 - 2023)

Time Series & Lag Panel Options for Traffic Accident Analysis:

a. Users can select a province from the dropdown to filter accident data by location.
b. Year Start and Year End can be specified to limit the time window for analysis.
c. The default view displays a time series plot showing the number of daily accidents in the selected province.
d. Tabs above the plot allow users to switch views:
- Time Series: trends over time
- Daily Lag: possible lag correlations
- By Accident Type: breakdown by accident categories
e. This tool helps users explore temporal and spatial patterns in road accidents across Thailand from 2019 to 2022.

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📊 EDA Dashboard `Analysis`

🕐 Time Series & Lag `Trends`

🧠 Predictive Modeling `Forecast`

Time Series Analysis

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Thailand Road Accident Analysis (2019-2022)
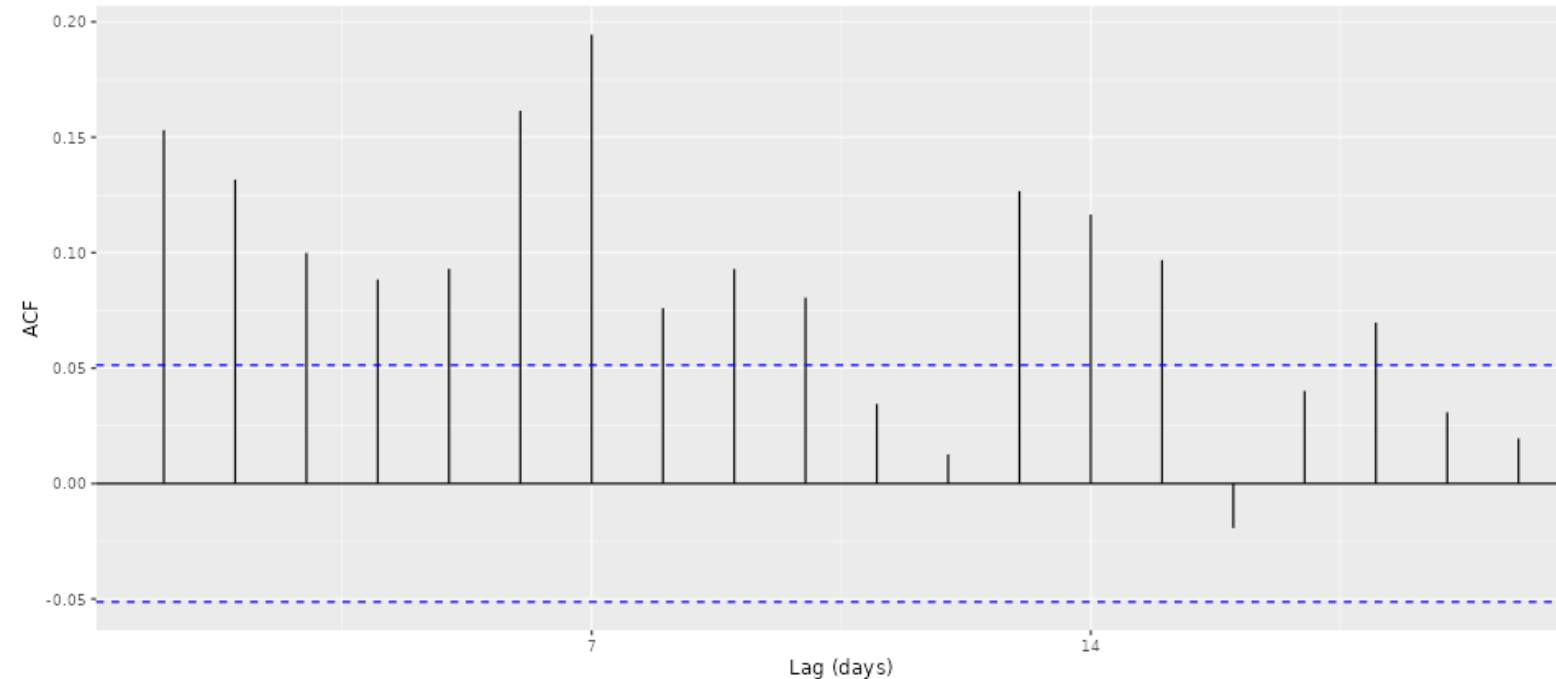
Province

Bangkok ▼

Lag (Days):

5 ⸻⬤⸻ 60

5   15   25   35   45   55 60

Time Series | **Daily Lag** | By Accident Type

Daily Lag of Accidents in Bangkok (lag = 20)

ACF / Lag (days)

Daily Lag Panel Options for Traffic Accident Analysis:

a. Users can select a province to examine time-lagged accident patterns for that location.

b. Use the Lag (Days) slider to set how many days to lag the data (e.g., 20 days).

c. The plot displays autocorrelation (ACF) values of daily accident counts for different lags.

d. Significant spikes above the blue threshold line suggest a possible repeating pattern at those lags.

e. This analysis helps detect periodic trends and temporal dependencies in accident occurrences.

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- 📊 EDA Dashboard **Analysis**
- 🕐 Time Series & Lag **Trends**
- 🧠 Predictive Modeling **Forecast**
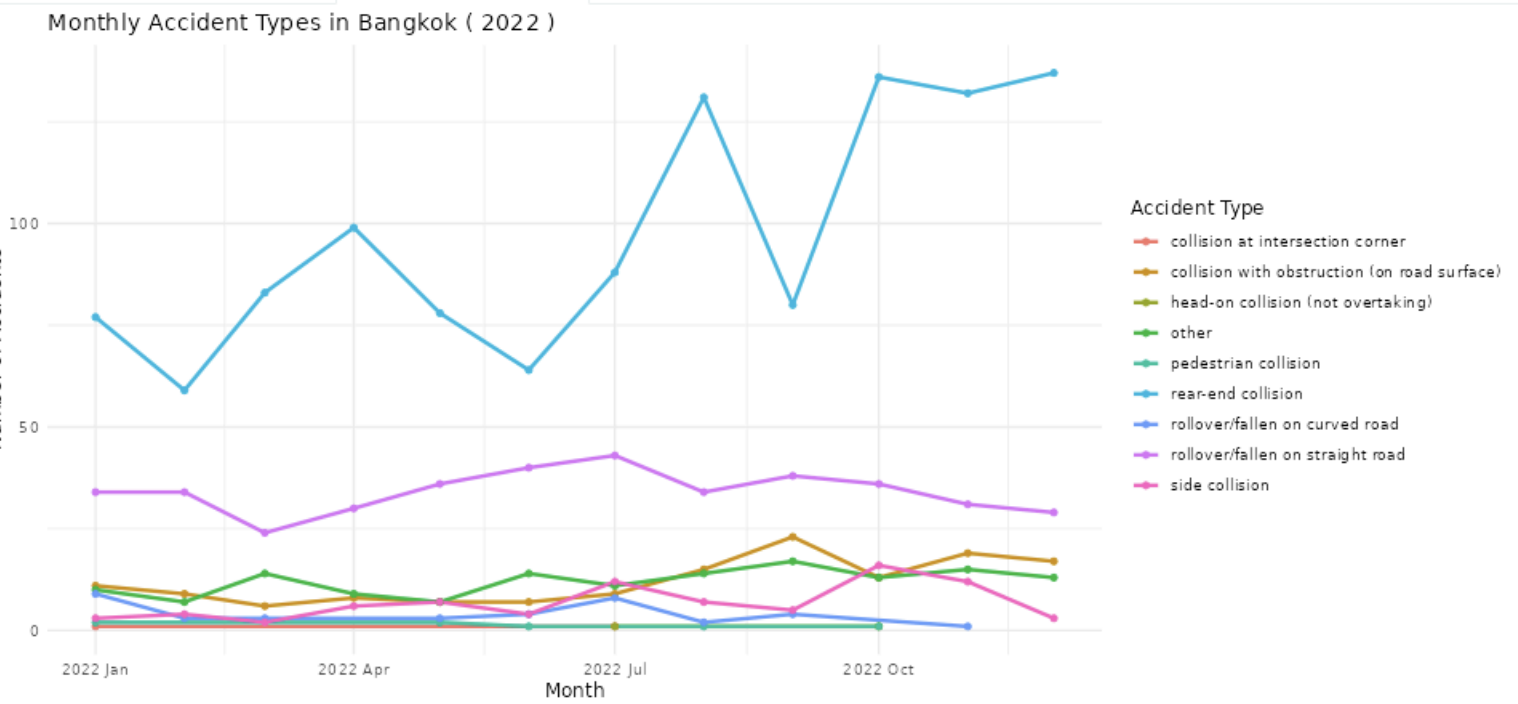
Time Series Analysis

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Thailand Road Accident Analysis (2019-2022)

Province

Bangkok ▾

Year Select

2022 ▾

Time Series | Daily Lag | **By Accident Type**

Monthly Accident Types in Bangkok (2022)

Accident Type
- collision at intersection corner
- collision with obstruction (on road surface)
- head-on collision (not overtaking)
- other
- pedestrian collision
- rear-end collision
- rollover/fallen on curved road
- rollover/fallen on straight road
- side collision

By Accident Type Panel Options for Traffic Accident Analysis:
a. Users can choose a province and a specific year to analyze accident types.
b. The line chart shows the monthly count of different accident types within the selected year.
c. Each line represents a specific accident type, allowing for comparison over time.
d. This visualization helps identify seasonal trends, dominant accident categories, and potential risk periods.
e. The panel supports targeted policy planning by understanding which types of accidents occur most frequently and when.

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- ☰ EDA Dashboard — **Analysis**
- 🕐 Time Series & Lag — **Trends**
- 🧠 Predictive Modeling — **Forecast**

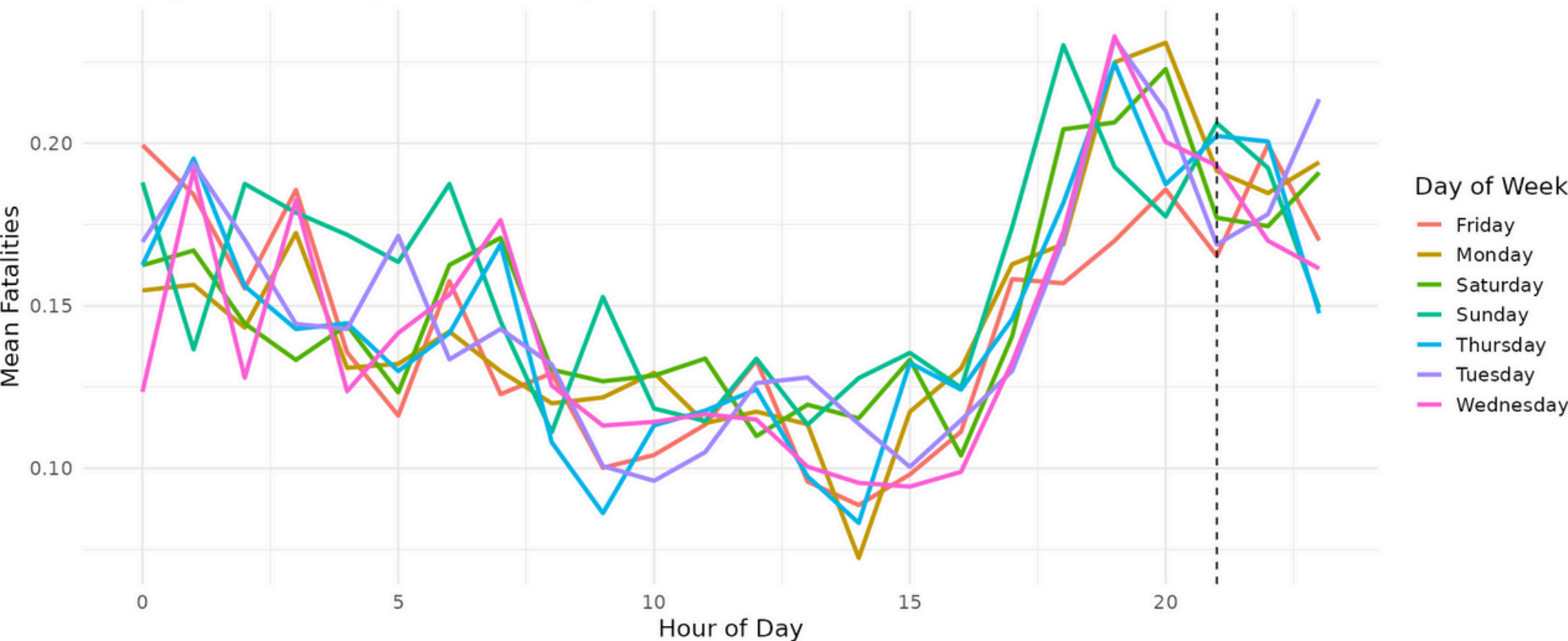## Predictive Analysis

Return to Main Website

Thailand Road Accident Analytics | Overall Trends | Predictive Analysis

Trend of Average Fatalities by Hour and Day
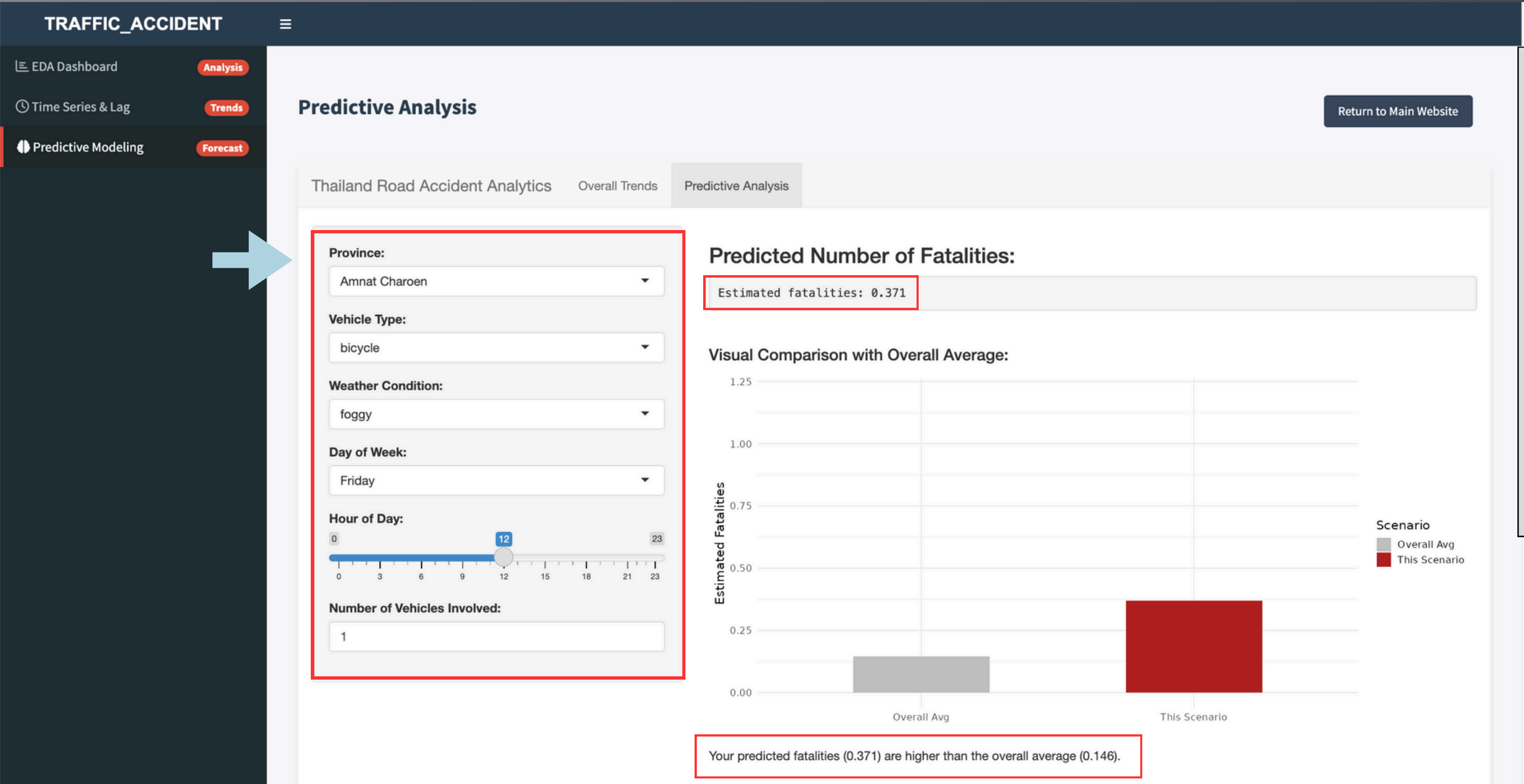
Average Fatalities by Hour and Day of Week

Day of Week
- Friday
- Monday
- Saturday
- Sunday
- Thursday
- Tuesday
- Wednesday

Overall Trends Panel Options for Exploring Fatality Patterns:
a. Users can explore four key visualizations related to average fatalities across different dimensions.
b. The "Trend of Average Fatalities by Hour and Day" line chart highlights peak risk hours across weekdays.
c. The "Average Fatalities by Day of Week" bar chart shows which days experience more fatal incidents.
d. The "Average Fatalities by Vehicle Type" helps identify which vehicle categories are most involved in fatal accidents.
e. The "Fatalities by Province" heatmap reveals regional hotspots, offering spatial insights into accident severity.

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- ⊫ EDA Dashboard `Analysis`
- ⏱ Time Series & Lag `Trends`
- ◆ Predictive Modeling `Forecast`

Predictive Analysis

Return to Main Website

Thailand Road Accident Analytics   Overall Trends   **Predictive Analysis**

Province:
Amnat Charoen ▼

Vehicle Type:
bicycle ▼

Weather Condition:
foggy ▼

Day of Week:
Friday ▼

Hour of Day:
0 — [12] — 23
0   3   6   9   12   15   18   21   23

Number of Vehicles Involved:
1

Predicted Number of Fatalities:

Estimated fatalities: 0.371

Visual Comparison with Overall Average:

Scenario
▢ Overall Avg
▮ This Scenario

(Y-axis: Estimated Fatalities — 0.00, 0.25, 0.50, 0.75, 1.00, 1.25)
(X-axis: Overall Avg, This Scenario)

Your predicted fatalities (0.371) are higher than the overall average (0.146).

Predictive Analysis Panel Options for Fatality Prediction

a. Users can input various factors including Province, Vehicle Type, Weather, Day of Week, Hour, and Number of Vehicles.

b. The model predicts the number of fatalities based on the selected conditions.

c. A bar chart compares the estimated fatalities from the scenario against the overall average.

d. This helps identify high-risk scenarios under specific conditions.

e. The panel supports proactive decision-making by allowing users to simulate and compare potential risks.