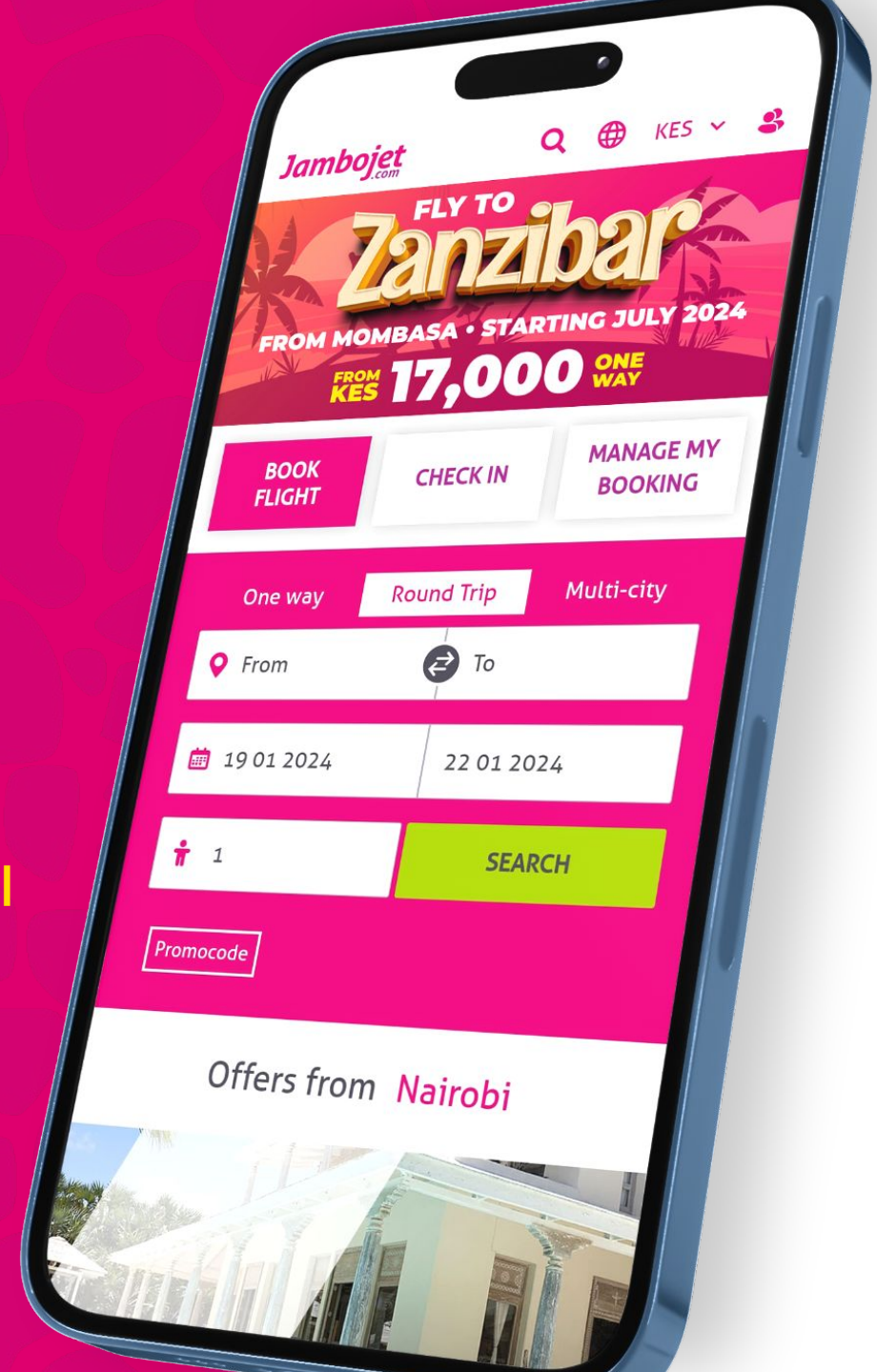


# Jambojet.com

## Web Traffic Prediction for Enhanced Revenue.

By: Mwenda Mugambi | Frank Kiptoo | Yvonne Kamari |  
Julliet Iswana | Sylvester Magunda | Trevor Mwangi



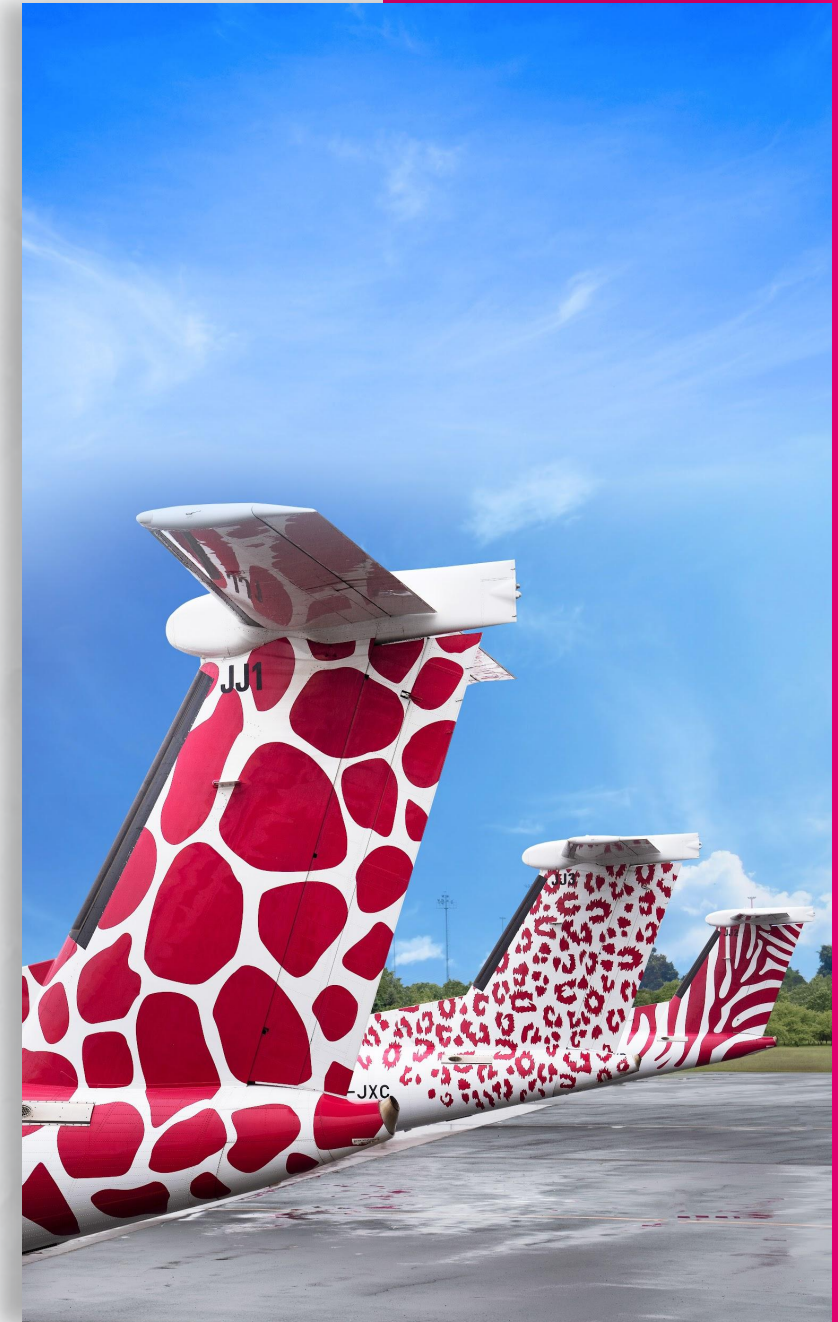
# Industry Background

## The need for diversification

Although the **COVID-19 pandemic hit airlines harder than any other aviation subsector**, it wasn't doing particularly well before then. From 2012 to 2019, despite a favorable environment of strong economic growth and low fuel prices, airlines were bleeding \$17 billion in economic profit a year, on average. Of the 122 carriers we studied, 77 percent were value destroyers (Exhibit 3). But the average losses of airlines before the pandemic were only around one-tenth of their \$168 billion in losses for 2020.

Their **revenues plummeted by 55 percent, setting the subsector back, in nominal terms, roughly 16 years—to 2004.**

[Source](#)

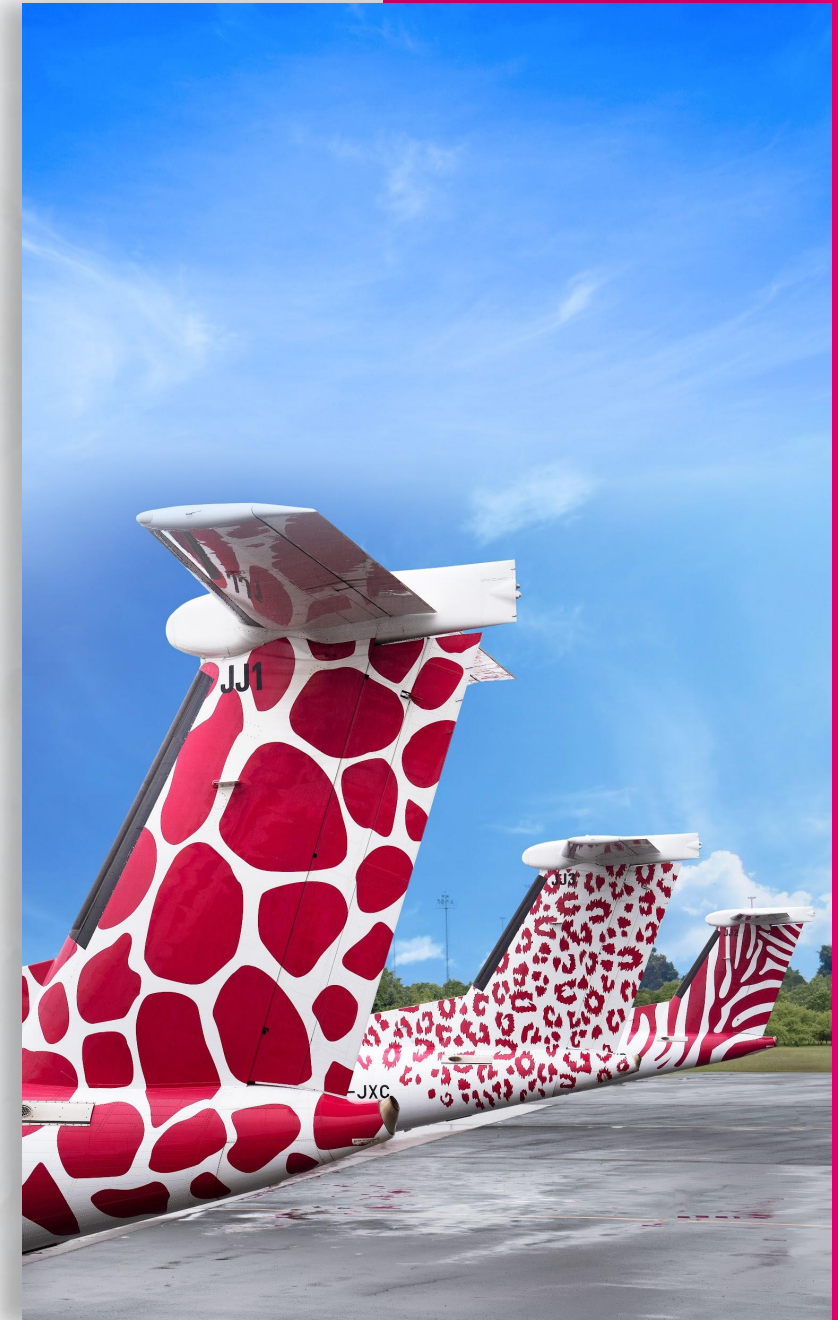




# Business Overview

## Leading Low-Cost Airline in East Africa.

- **Key Strength:** Preferred choice for cost-conscious travelers, emphasizing in the East African region.
- **Market Position:** Dominant player in the aviation industry, known for budget-friendly and reliable air travel. with a **Market Share** of **54+%** in domestic air travel.
- **Diversification:** Launched advertising product in 2018, leveraging their high-traffic website to boost revenue and advertiser satisfaction.





# Problem Statement and Project Objectives

Jambojet seeks to maximize revenue and improve advertiser satisfaction by optimizing ad spaces.

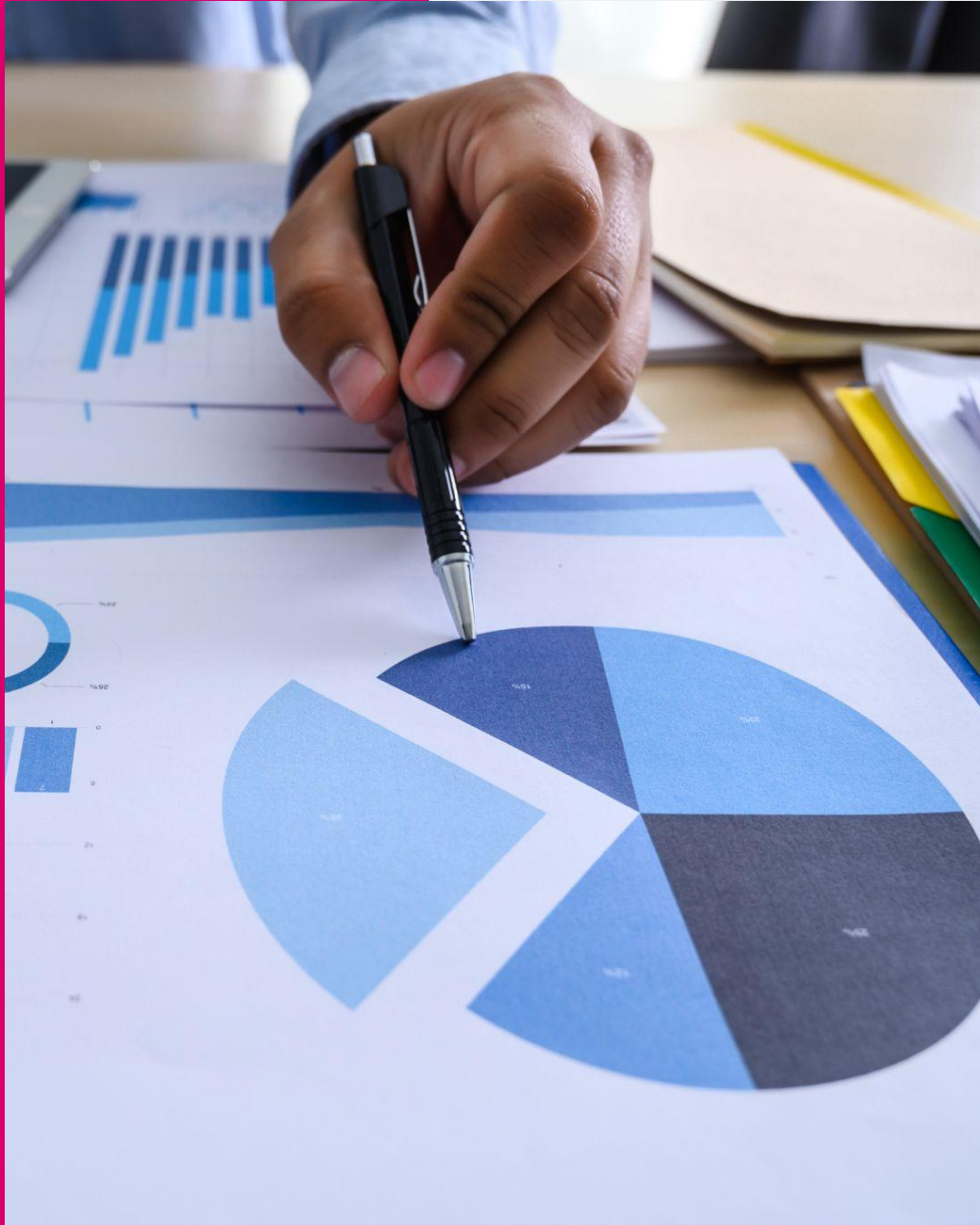
- This project focuses on revolutionizing ad placement through **Advanced Time Series Forecasting**.
- This approach will enhance Jambojet's platform competitiveness and contribute to the broader industry's shift towards **efficient online advertising solutions**.



# Data Collection and Understanding

- The dataset used simulates the web traffic behaviors of websites such as [www.jambojet.com](http://www.jambojet.com). real-time time series data can be scrapped from **Google Analytics**
- It considers their **marketing campaigns, travel restrictions**, and other industry factors that may influence web traffic.
- The dataset consists of **total users** ('Simulated\_Users') and **new users** ('Simulated\_New\_Users') per day, sourced from Google Analytics.
- It captures daily fluctuations in user engagement, essential for precise forecasting and ad optimization.



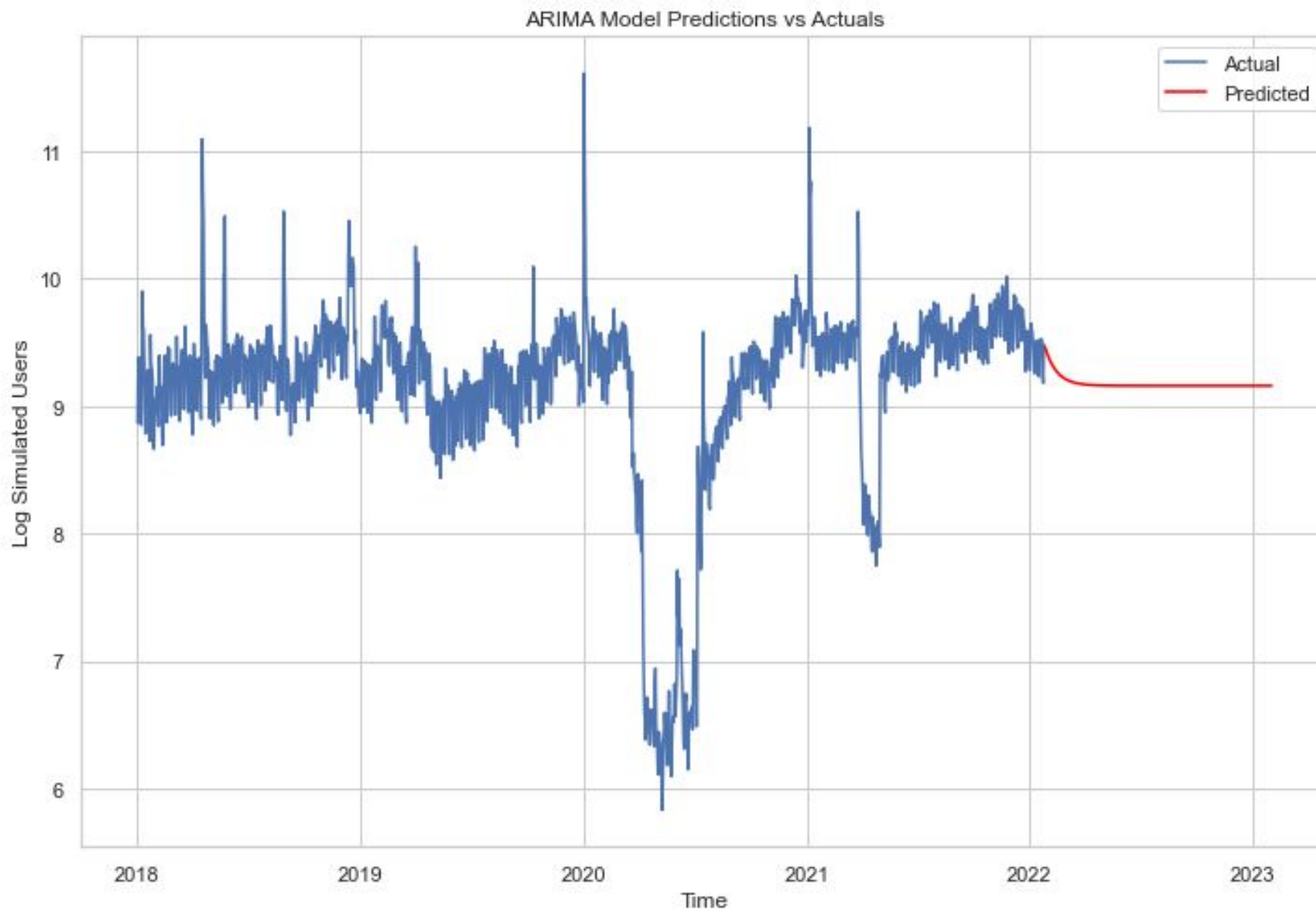


## Success Criteria

- **Root Mean Squared Error (RMSE)** is used to evaluate the accuracy of our time series forecasting models, specifically focusing on predicting daily total users.



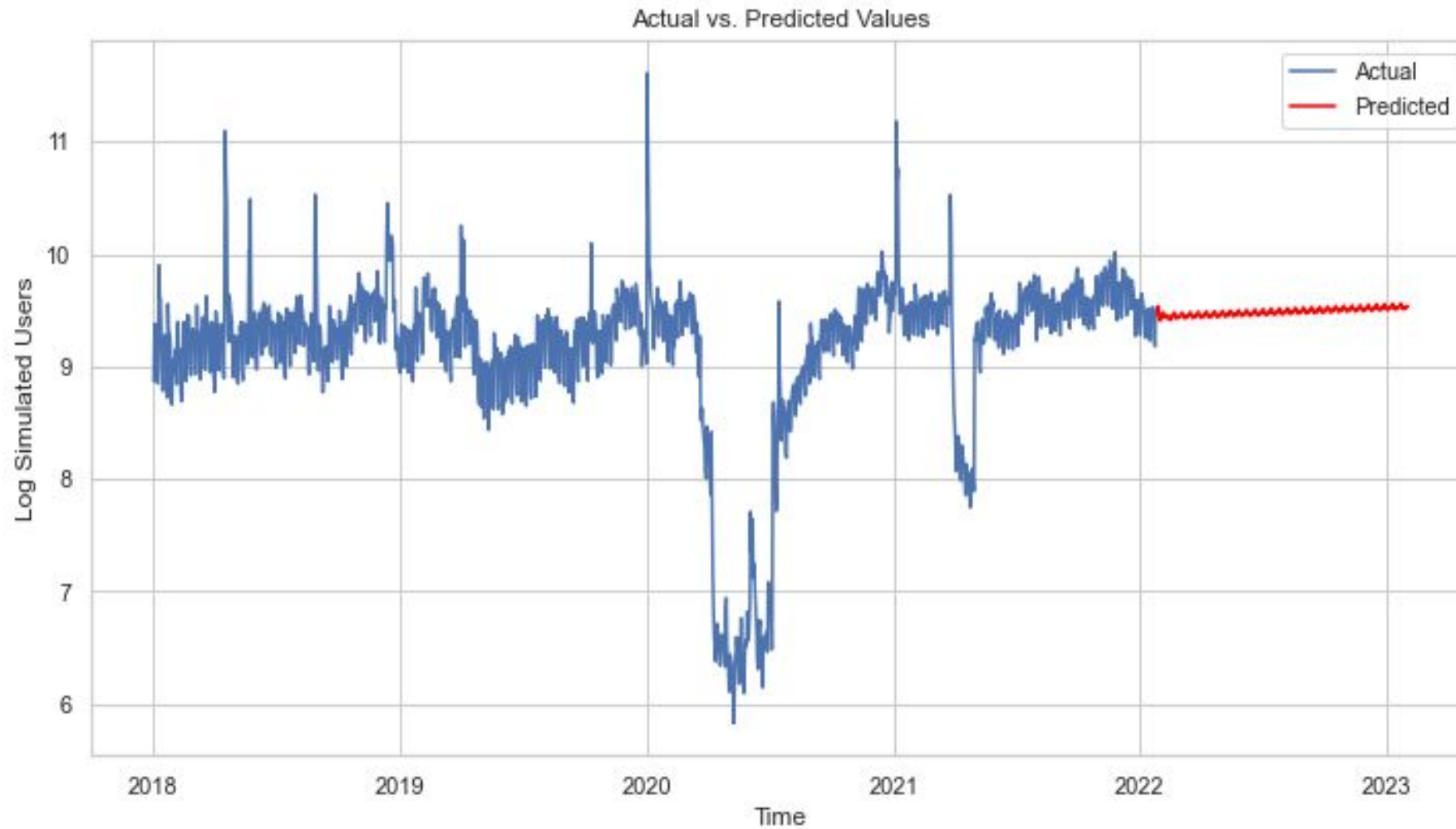
# Baseline Model



Arima Model:  
**RMSE: 0.5976628**

The RMSE is relatively low, but not the lowest among the models presented.

# Model 4



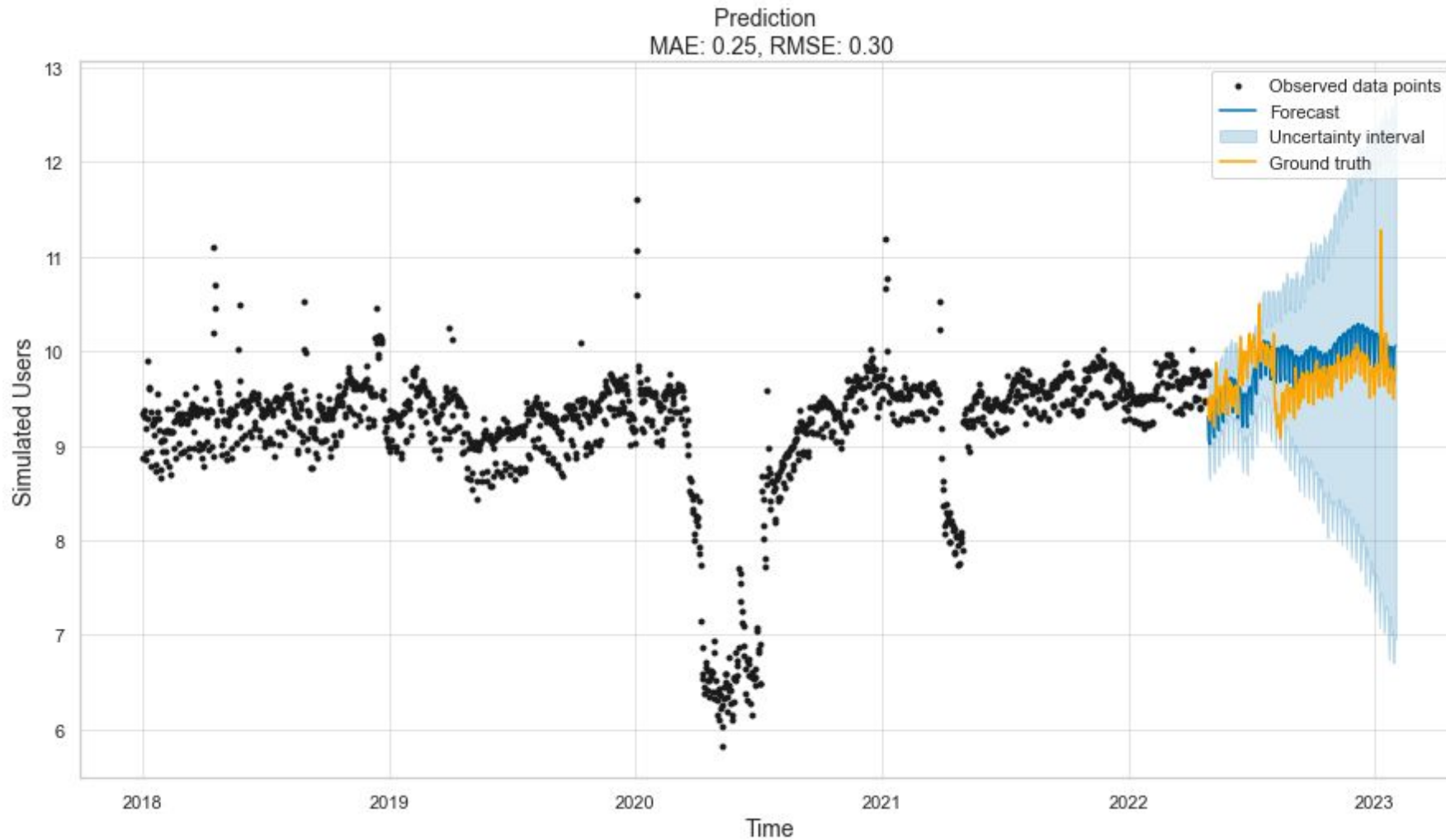
Sarima Model:  
**RMSE: 0.327229**

This model is a SARIMA model, which extends ARIMA by adding seasonal components.

The RMSE for this model is lower suggesting that the model is a good fit to the data.



# Best Performing Model



Facebook Prophet:  
**RMSE: 0.2965632**

This is a an open-source forecasting tool developed by **Facebook's Core Data Science team**.

The RMSE is the lowest of the other models suggesting that it had the best fit to the data.

# Conclusion

In conclusion, the evaluation of the different time series models applied to the dataset provides valuable insights into their performance.

- **While the PMDARIMA model (Model 3) offers a competitive RMSE close to that of SARIMA**, its advantage lies in the automatic selection of model parameters, showcasing the effectiveness of the pmdarima package. **The ARIMA models (Models 1 and 2)** also provide reasonable predictive capabilities, with Model 2, incorporating differencing, outperforming Model 1.
- Considering the RMSE values, the **Facebook Prophet model (Model 5)** stands out as the most accurate among the evaluated models. **Its lower RMSE suggests that Prophet is well-suited** for forecasting the simulated user data in this particular scenario. It outperforms the traditional ARIMA and SARIMA models, as well as the auto\_arima approach.



# Recommendations

## 1. Facebook Prophet Model for Forecasting:

- Implement the Facebook Prophet model for accurate web traffic predictions.
- Use forecasts to identify peak traffic periods for dynamic ad placement and pricing.

## 2. Marketing and Communication Strategy:

- Align marketing with Jambojet's event calendar, focusing on peak travel times and holidays.
- Plan campaigns in advance to build anticipation.
- Use social media and email marketing for promoting deals during low seasons.

## 3. Promotion and Event-Driven Marketing:

- Coordinate ad campaigns with peak travel periods and promotional events.
- Partner with tourism boards and travel agencies for joint promotions.
- Use real-time marketing strategies during high traffic periods.

## 4. Segmentation and Targeted Advertising:

- Analyze different user segments for tailored advertising.
- Offer personalized promotions, like targeting international travelers during winter.

# Cont..

## **5. Dynamic Ad Space Pricing:**

- Adopt a dynamic pricing strategy based on seasonality trends.

## **6. Advertiser Dashboard and Real-Time Insights:**

- Introduce a dashboard for real-time ad performance and web traffic insights.
- Allow advertisers to adjust campaigns based on data-driven insights.

## **7. Enhancing User Experience:**

- Optimize the website for peak traffic times to prevent slowdowns.
- Incorporate user feedback for continual improvement.

## **8. Response to External Factors:**

- Monitor external factors impacting web traffic.
- Develop contingency plans for unexpected travel pattern changes due to global events.



# THANK YOU

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