



PREDICTING WEEKLY SALES WITH AI-POWERED INSIGHTS

FINAL PROJECT

By Michael Los



INTRODUCTION

- Accurate **sales forecasting** and effective customer support are critical for retail success.
- **Reduction** of food waste
- **Demand-driven** availability

OUT-OF-STOCK



CUSTOMER RETENTION THROUGH
DEMAND-ORIENTED AVAILABILITY

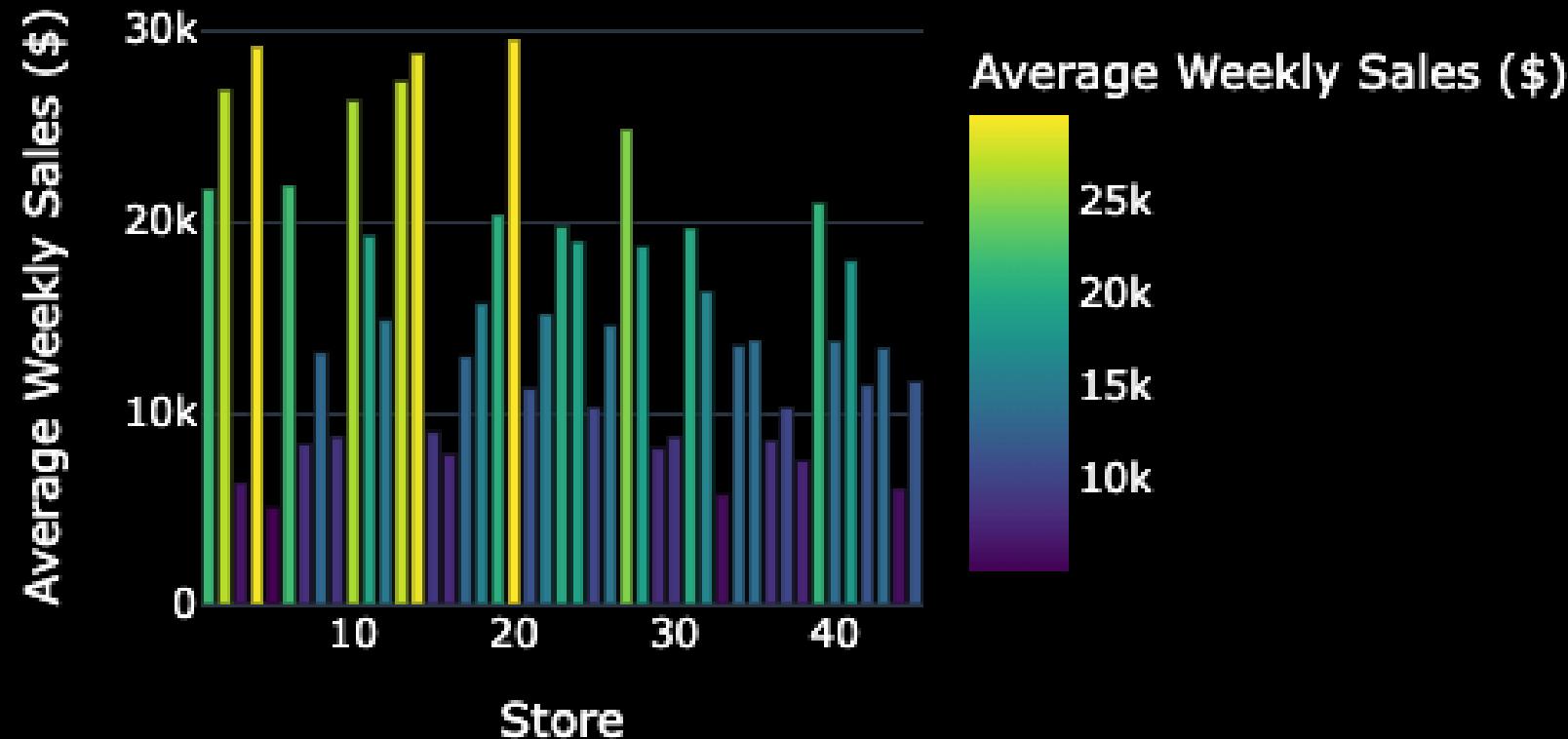
Tools and Technologies

- Machine Learning
- Streamlit
- AI Chatbot



PROBLEM STATEMENT & OBJECTIVES

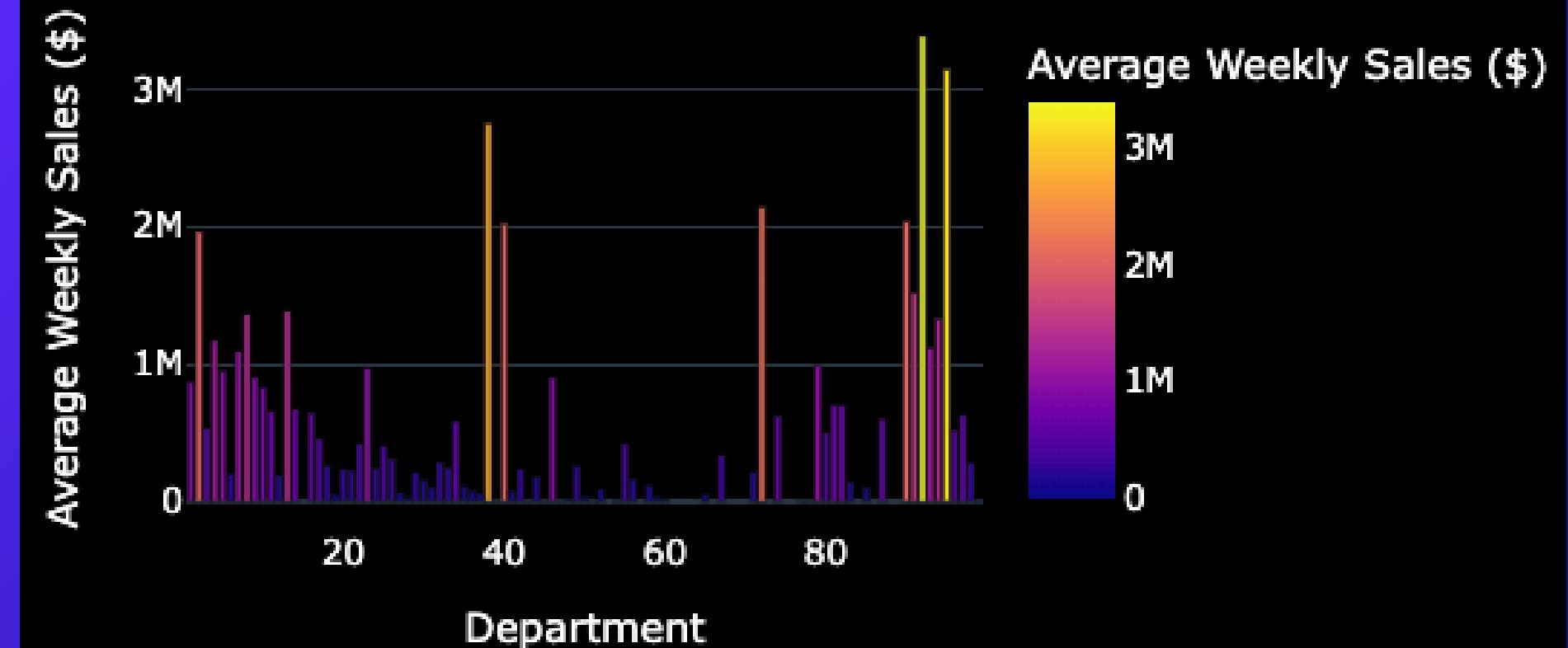
Average Weekly Sales per Store



Problem

- **Challenges** in managing inventory and promotions
- **Manual customer** service is time-intensive and less scalable.

Average Weekly Sales per Department
across all stores



Objectives

- Develop a **machine learning** model to forecast weekly sales for retail stores.
- **Streamlit app** with an AI-powered chatbot

METHODOLOGY



KEY RESULTS & INSIGHTS

Actual vs Predicted Weekly Sales with Seasonality



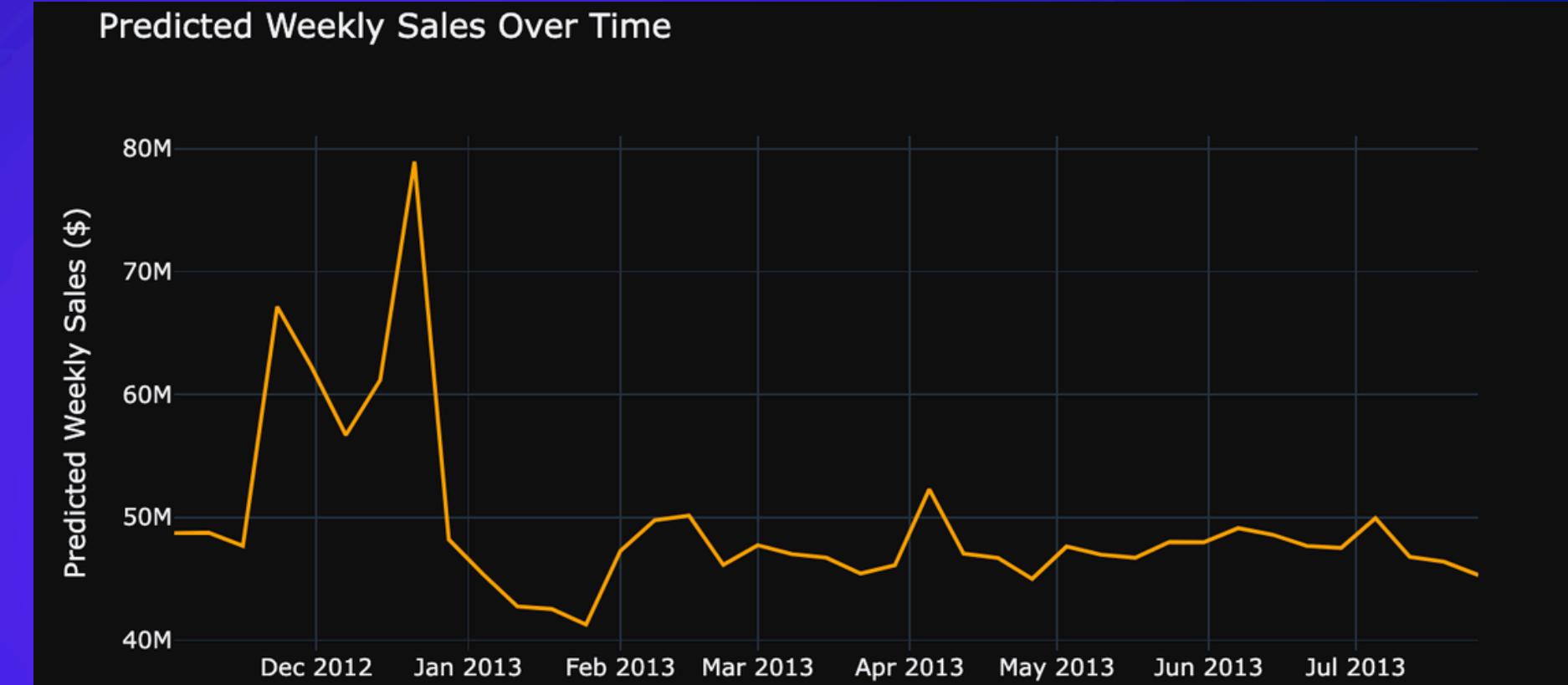
FINAL MODEL TESTING PERFORMANCE

- RMSE: 265.3630
- MAE: 112.0616
- R²: 0.9995
- Test Percentage **Error:** 1.84%

BUSINESS IMPACT

- Improved inventory planning and promotion strategies.
- Reduced overstock and stockouts.

Predicted Weekly Sales Over Time



DEMO & FEATURES



The screenshot shows a Streamlit application interface. On the left, a navigation sidebar lists options: Forecast (selected), Upload CSV, Data Insights, Model Evaluation, Chatbot, and Exit. The main area features a logo for "Streamly STREAMLIT ASSISTANT" and the title "Weekly Sales Forecast and Analysis". Below this, a section titled "Weekly Sales Prediction" includes a sub-section "Enter the input features to predict weekly sales." It displays four input fields for "Rolling 7-day average sales" (2000,00), "Sales from 1 week ago" (2100,00), "Sales from 2 weeks ago" (1900,00), and "Sales from 3 weeks ago" (2050,00). Each input field has a minus and plus sign for adjustment.



APP DEVELOPMENT

- **Streamlit** for an interactive user interface.
- Interactive Forecasting by **adjusting** features
- **Data Insights Section:** Includes tools for data exploration.
- Developed an **AI chatbot** to address user inquiries about the app



CONCLUSION & FUTURE WORK

01

- Developed a robust **forecasting system** integrated with AI-driven user support.
 - Demonstrated the power of **machine learning** and AI in real-world applications.
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02

- How much **improvement** (in stockouts, overstock, waste reduction and reduction in manual customer service time) is achieved
- Extend the solution to **other retail datasets** and industries.
- Enhance **chatbot** capabilities to provide deeper insights and advanced interactivity.