

Sales Forecasting & Scenario Analysis Report

1. Executive Summary

This report presents a comprehensive sales forecasting analysis using historical transaction data. The objective is to estimate future sales under multiple scenarios to support operational, financial, and strategic decision-making.

The forecasting system produces:

- A **Base Case** representing the most likely sales outcome
- A **Best Case** reflecting strong demand conditions
- A **Worst Case** reflecting conservative demand assumptions
- A **Seasonality Scenario** that adjusts forecasts based on recurring seasonal patterns

Model Accuracy:

Mean Absolute Error (MAE): £15,206.13

Root Mean Squared Log Error (RMSLE): 0.765

MAE represents the average daily forecast error in currency terms, while RMSLE measures proportional error and is particularly useful for evaluating performance during high-sales periods.

2. Forecast Scenarios Explained

Base Case: The most likely forecast generated by the model using historical patterns.

Best Case: Represents an upside scenario where demand exceeds expectations. This is calculated by adding historical forecast volatility to the base forecast.

Worst Case: Represents a downside risk scenario where demand underperforms expectations. This is calculated by subtracting historical forecast volatility from the base forecast.

Seasonality Scenario: Adjusts the base forecast using historical seasonal patterns (e.g., holiday peaks or off-season slowdowns).

3. Daily Scenario Forecast

What this chart shows:

Daily sales forecasts under Base, Best, and Worst scenarios.

How to read it:

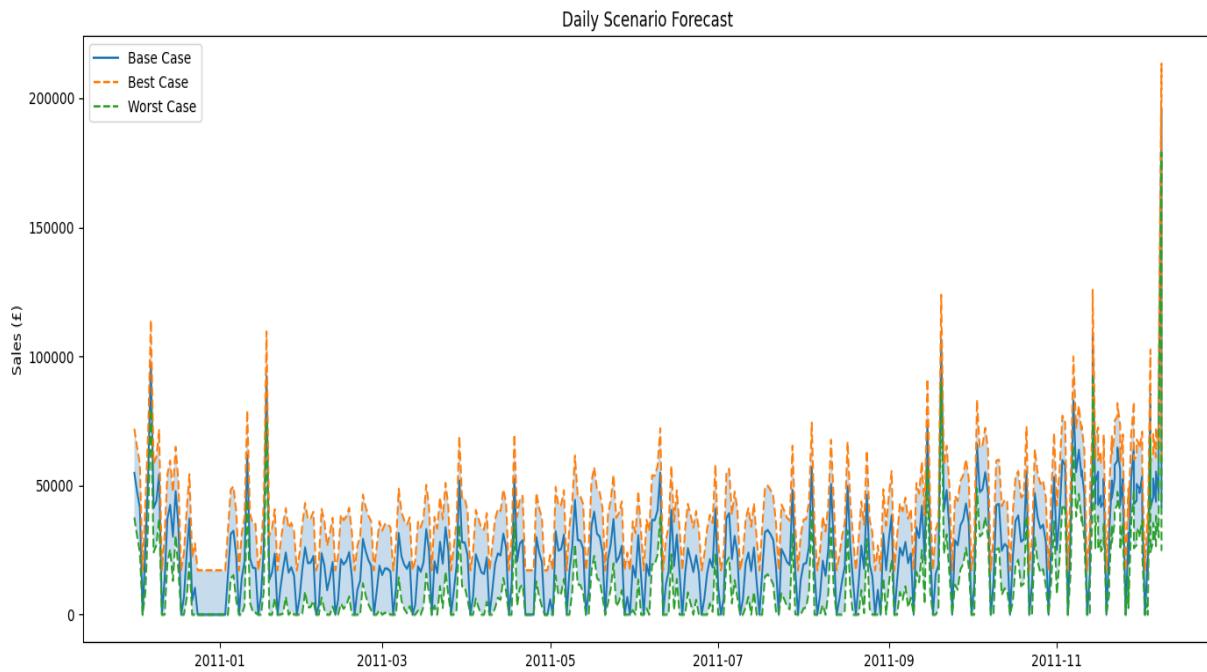
The solid line represents the most likely (base) forecast. The dashed lines represent optimistic and conservative outcomes. The shaded area shows the uncertainty range.

How to use it:

Use this view for short-term operational planning such as staffing, promotions, and inventory replenishment.

Important note:

Daily values can be volatile; trends are more important than individual points.



4. Weekly Scenario Forecast

What this chart shows:

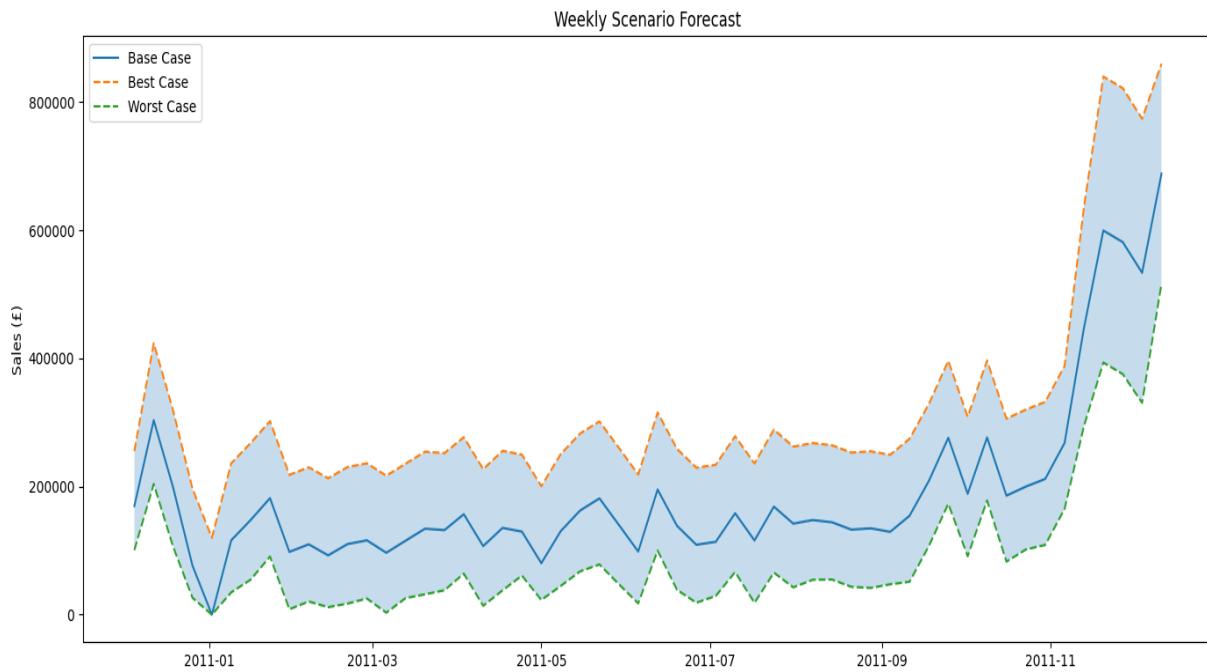
Weekly aggregated sales forecasts across scenarios.

How to read it:

Each point represents total sales for a full week, reducing daily noise.

How to use it:

Ideal for workforce planning, weekly targets, and short-term supply planning.



5. Monthly Scenario Forecast

What this chart shows:

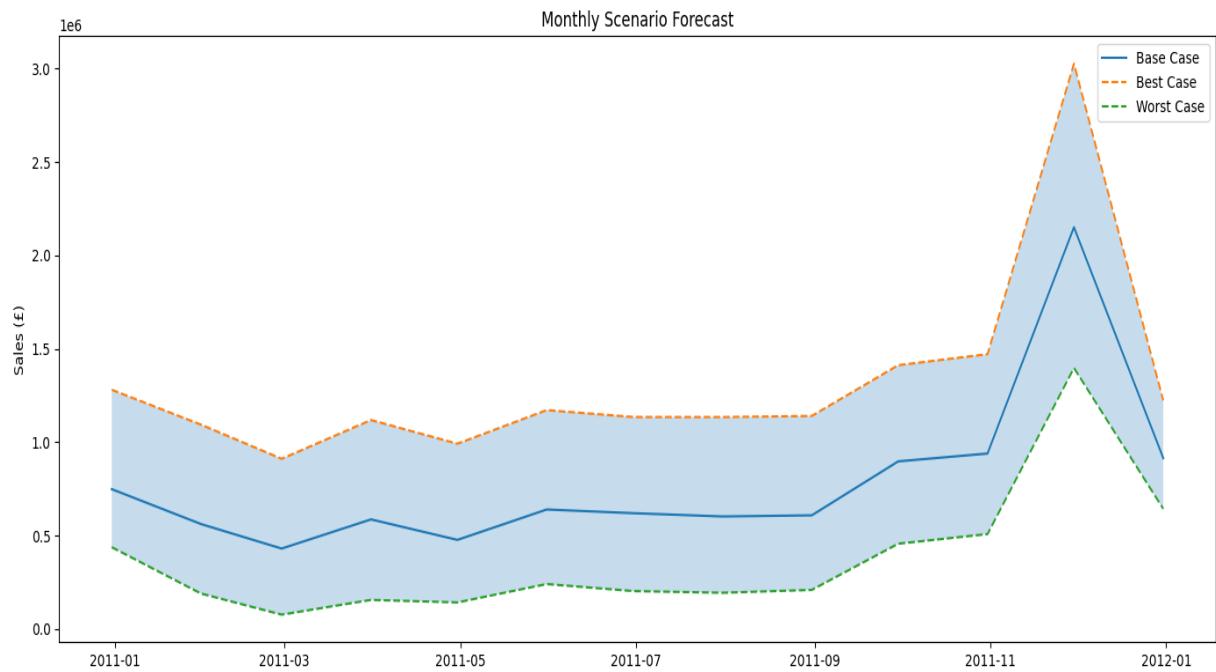
Monthly sales forecasts aligned with financial reporting periods.

How to read it:

Values represent total sales for each calendar month.

How to use it:

Suitable for budget tracking, revenue forecasting, and management reporting.



6. Quarterly Scenario Forecast

What this chart shows:

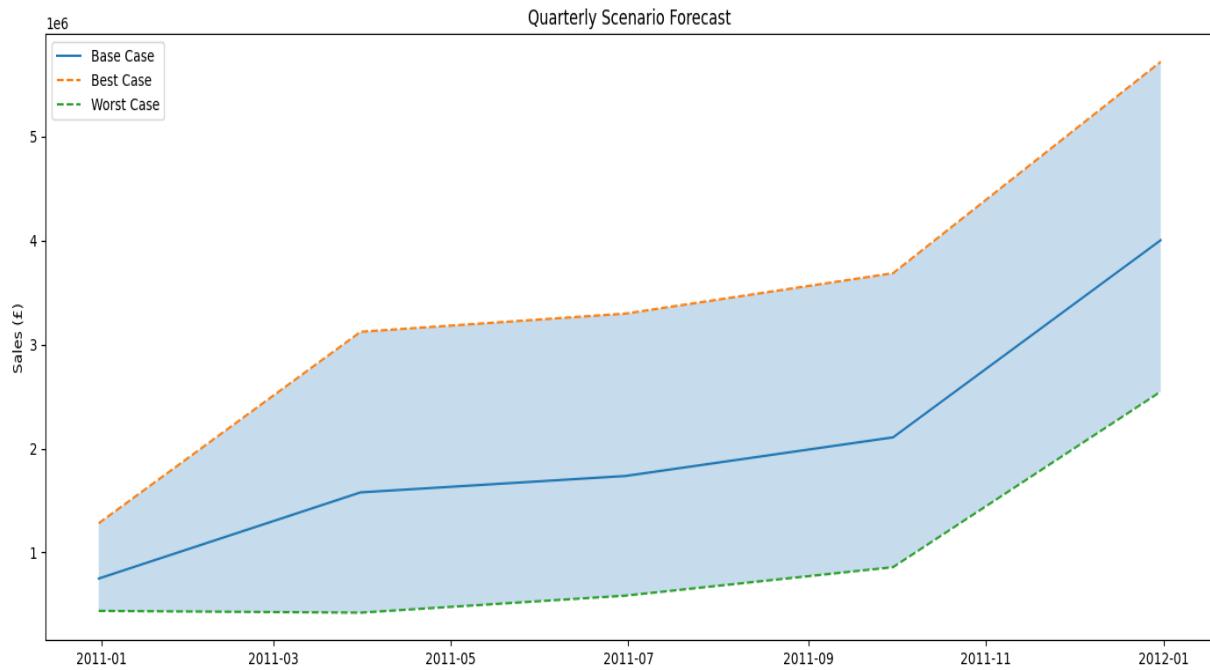
Quarterly sales projections under different demand scenarios.

How to read it:

Each point represents total sales for a full quarter.

How to use it:

Designed for strategic planning, board-level reporting, and long-term forecasting.



7. Seasonality-Adjusted Forecast

What this chart shows:

A forecast adjusted for recurring seasonal patterns observed in historical data.

How to read it:

The seasonality-adjusted line highlights periods where sales are expected to systematically increase or decrease due to seasonality.

How to use it:

Useful for planning around holidays, peak seasons, and off-peak periods.

