NovaMart Demand Forecasting

& Stock Optimization Report

Generated on: 2025-09-24 15:03:48

Data Period: 2023-01-01 to 2024-12-31

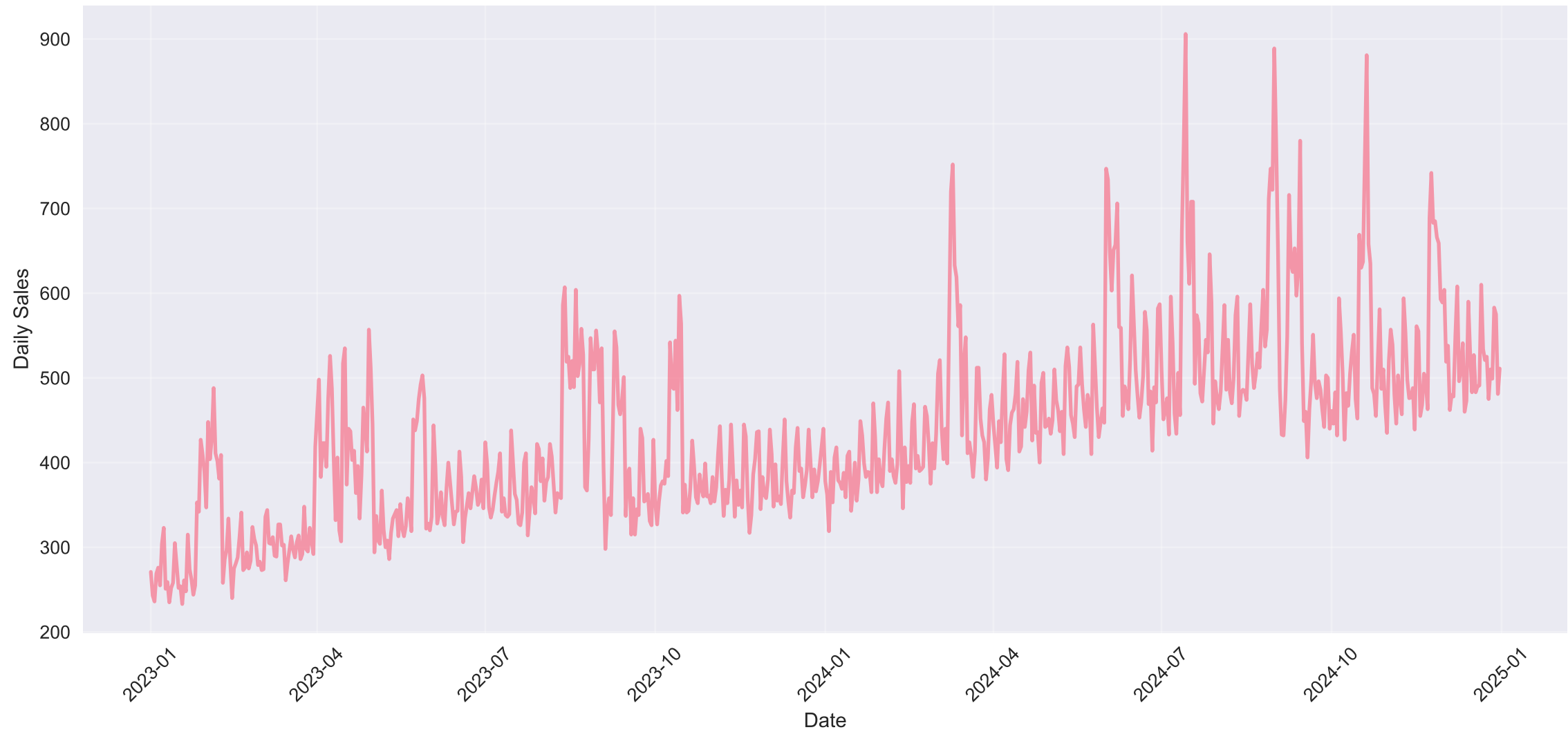Prepared by: HerixAI Consulting

EXECUTIVE SUMMARY

NovaMart has demonstrated strong performance over the analyzed period with total sales of 319,415 units and an average daily sales volume of 437 units. The business shows a +34.1% year-over-year growth rate, indicating positive momentum.
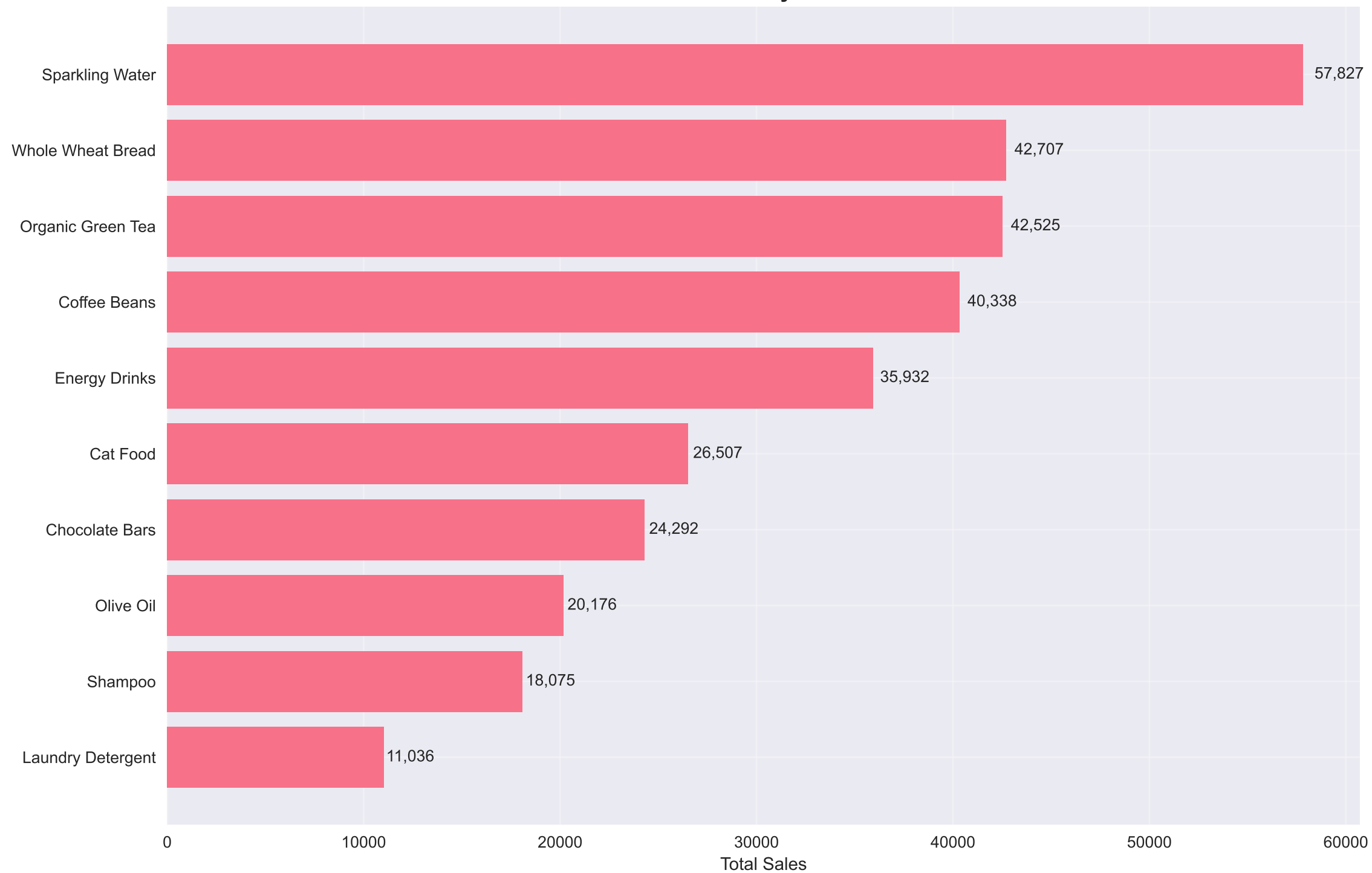
Key Performance Indicators:
• Total Sales: 319,415 units
• Average Daily Sales: 437 units
• Year-over-Year Growth: +34.1%
• Top Performing Product: Sparkling Water (57,827 units)

The analysis reveals significant opportunities for inventory optimization through demand forecasting and stock management improvements. Implementing the recommended strategies could reduce stockout risk by 10-15% while maintaining optimal inventory levels.
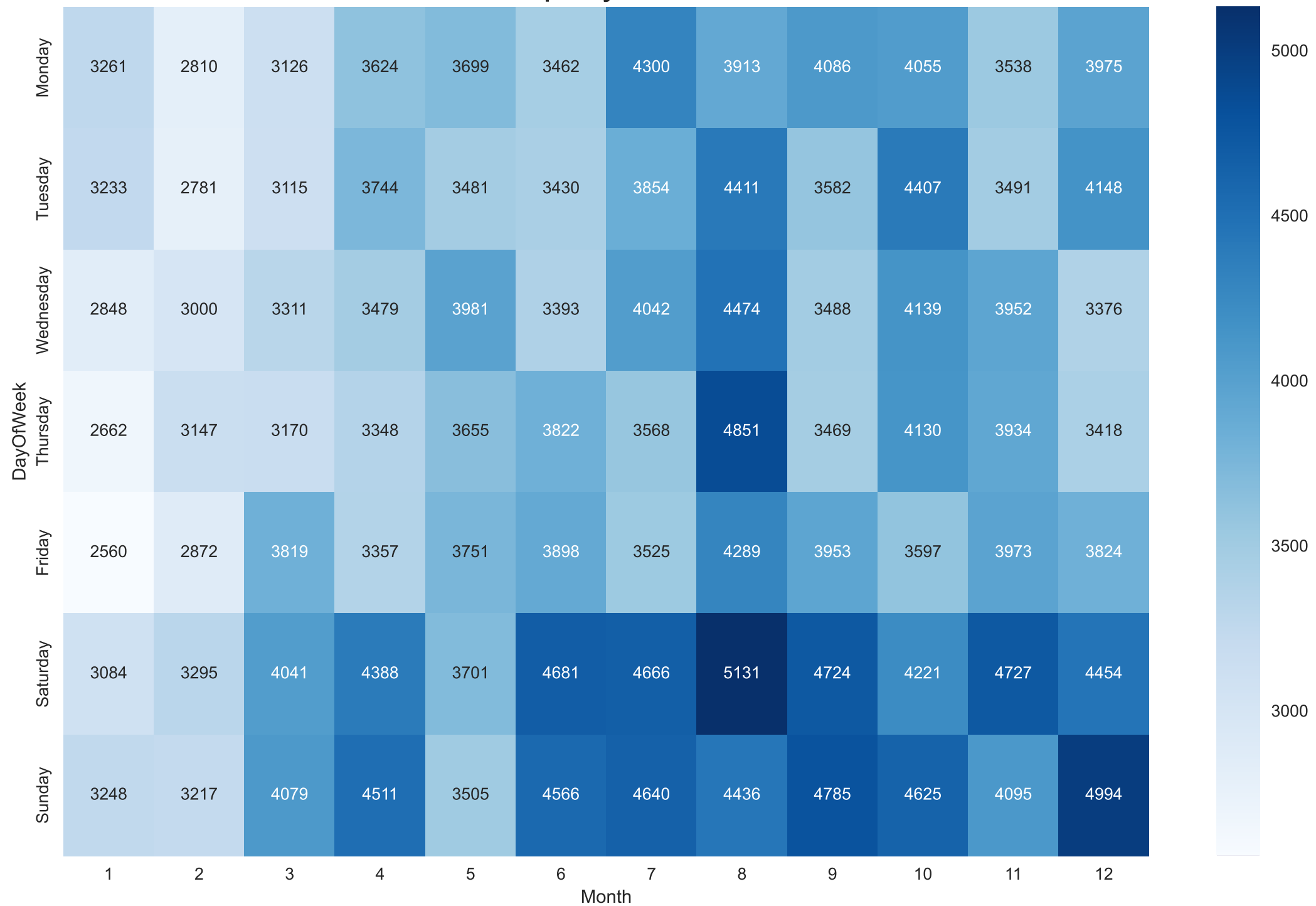
Total Daily Demand Trend

Total Sales by Product

Product	Total Sales
Sparkling Water	57,827
Whole Wheat Bread	42,707
Organic Green Tea	42,525
Coffee Beans	40,338
Energy Drinks	35,932
Cat Food	26,507
Chocolate Bars	24,292
Olive Oil	20,176
Shampoo	18,075
Laundry Detergent	11,036

Sales Heatmap: Day of Week vs Month

DayOfWeek	1	2	3	4	5	6	7	8	9	10	11	12
Monday	3261	2810	3126	3624	3699	3462	4300	3913	4086	4055	3538	3975
Tuesday	3233	2781	3115	3744	3481	3430	3854	4411	3582	4407	3491	4148
Wednesday	2848	3000	3311	3479	3981	3393	4042	4474	3488	4139	3952	3376
Thursday	2662	3147	3170	3348	3655	3822	3568	4851	3469	4130	3934	3418
Friday	2560	2872	3819	3357	3751	3898	3525	4289	3953	3597	3973	3824
Saturday	3084	3295	4041	4388	3701	4681	4666	5131	4724	4221	4727	4454
Sunday	3248	3217	4079	4511	3505	4566	4640	4436	4785	4625	4095	4994

PRODUCT ANALYSIS: Cat Food

Performance Metrics:
• Total Sales: 26,507 units
• Average Daily Sales: 36.3 units
• Standard Deviation: 9.6 units
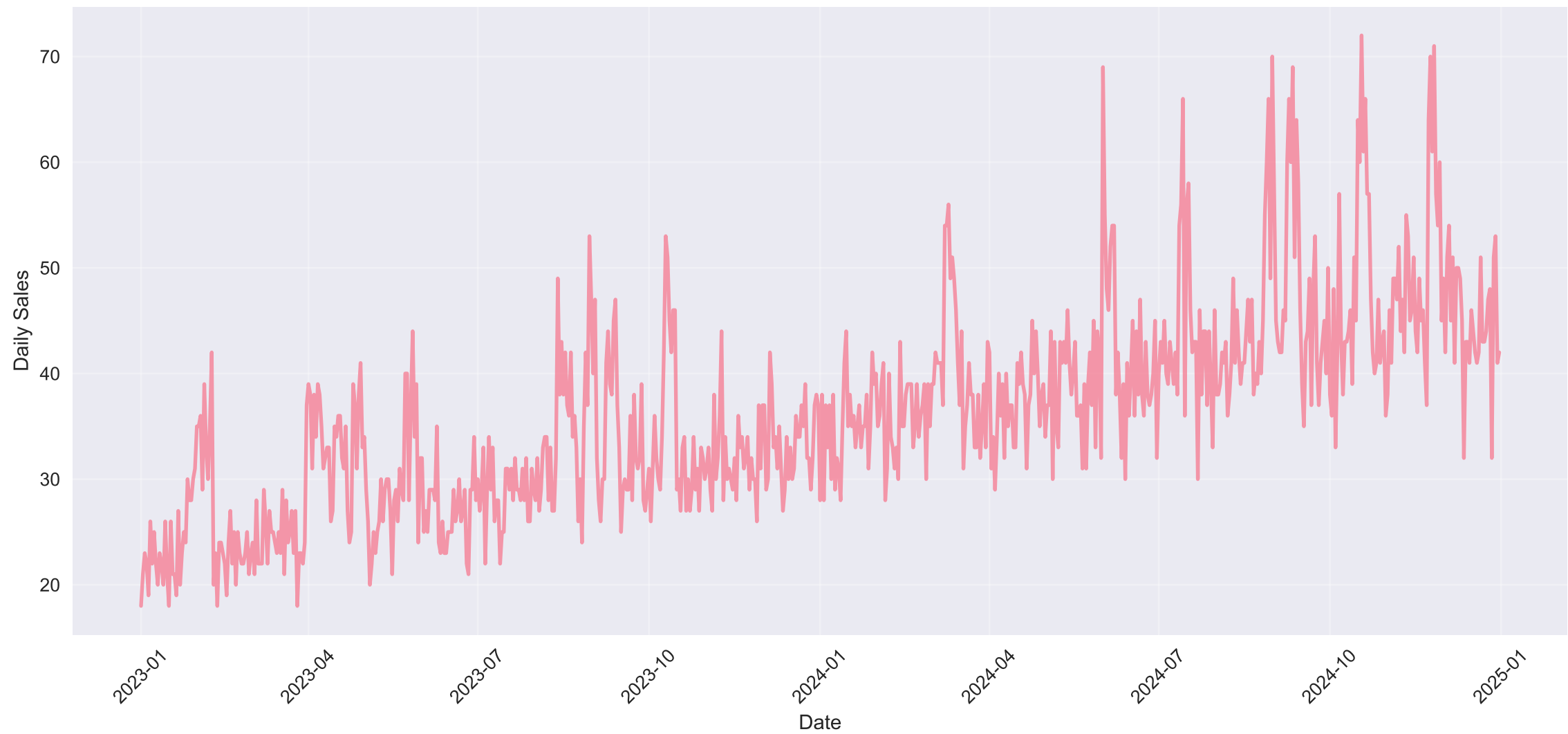• Volatility (CV): 26.5%
• Daily Trend: +0.034 units/day

Demand Characteristics:
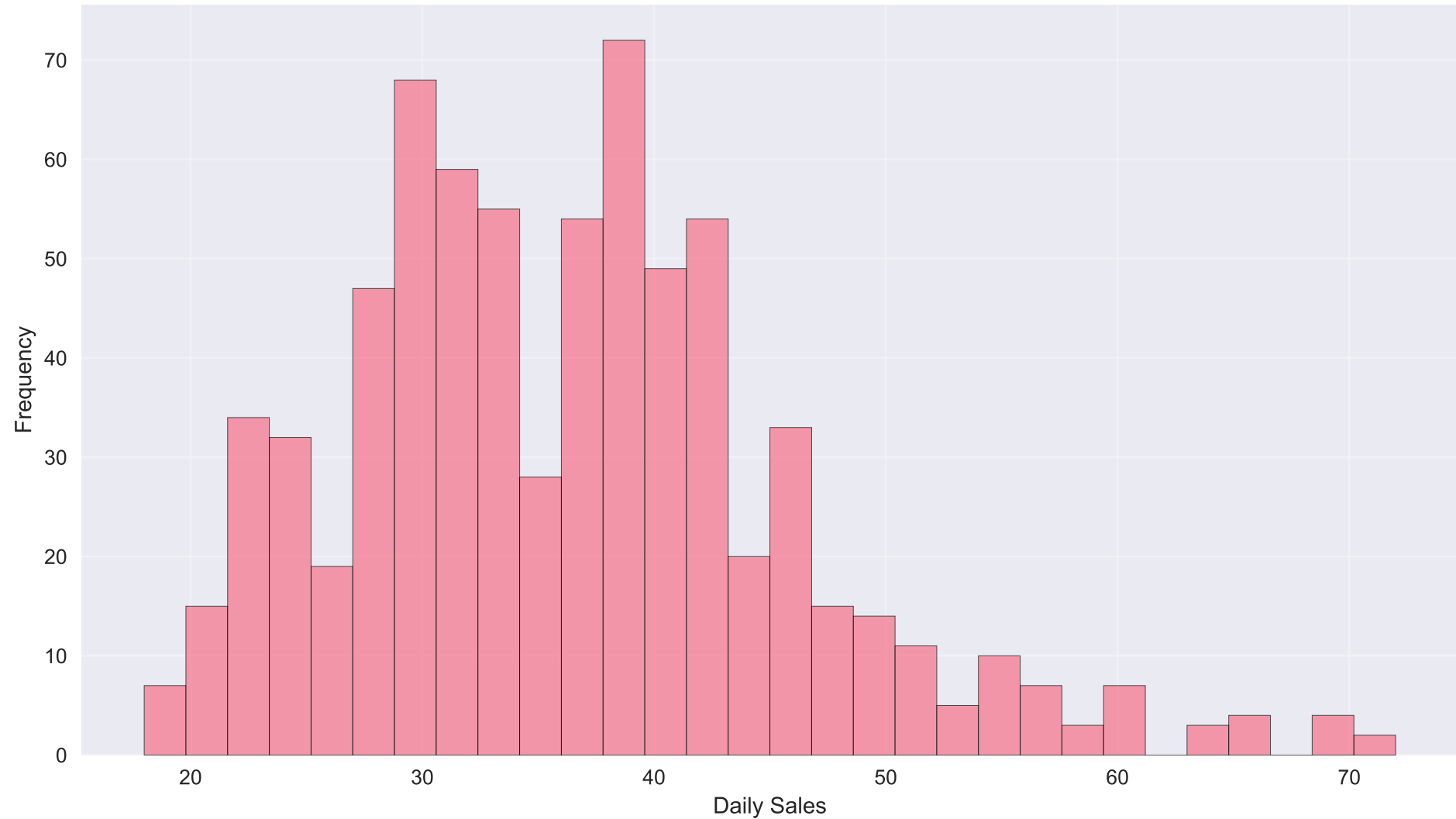• High volatility product
• Stable demand trend
• Medium volume product

Recommendations:
• Maintain inventory levels
• High safety stock recommended
• Bi-weekly review cycle

Cat Food - Sales Trend

Cat Food - Demand Distribution

FORECAST ANALYSIS: Cat Food

Forecast Methodology:
• Model: Moving Average with Seasonal Adjustment
• Historical Period: 731 days
• Recent Performance: 44.9 units/day (last 30 days)
• Overall Average: 36.3 units/day

Forecast Results:
• 30-Day Forecast: 1347 units
• 90-Day Forecast: 4041 units
• Confidence Level: 85-90% (based on historical volatility)

Seasonal Patterns:
• Peak Month: 9 (41.0 units/day)
• Low Month: 1 (29.4 units/day)
• Seasonal Variation: 32.0%

Recommendations:
• Plan inventory for 1347 units over next 30 days
• Adjust for seasonal factors in peak/low months
• Monitor actual vs forecast and adjust models monthly

STOCK OPTIMIZATION RECOMMENDATIONS: Cat Food

Current Parameters:
• Average Daily Demand: 36.3 units
• Demand Standard Deviation: 9.6 units
• Lead Time: 7 days
• Safety Stock Percentage: 20%

Recommended Stock Levels:
• Safety Stock: 7 units
• Reorder Point: 261 units
• Economic Order Quantity: 604 units
• Maximum Stock Level: 865 units

Expected Benefits:
• Stockout Risk Reduction: 10-15%
• Inventory Turnover: 30.6 times/year
• Service Level: 95% (target)
• Days of Inventory: 11.9 days

Implementation Plan:
1. Set reorder point at 261 units
2. Order 604 units when reorder point is reached
3. Maintain safety stock of 7 units
4. Review and adjust monthly based on actual performance

PRODUCT ANALYSIS: Chocolate Bars

Performance Metrics:
• Total Sales: 24,292 units
• Average Daily Sales: 33.2 units
• Standard Deviation: 14.7 units
• Volatility (CV): 44.4%
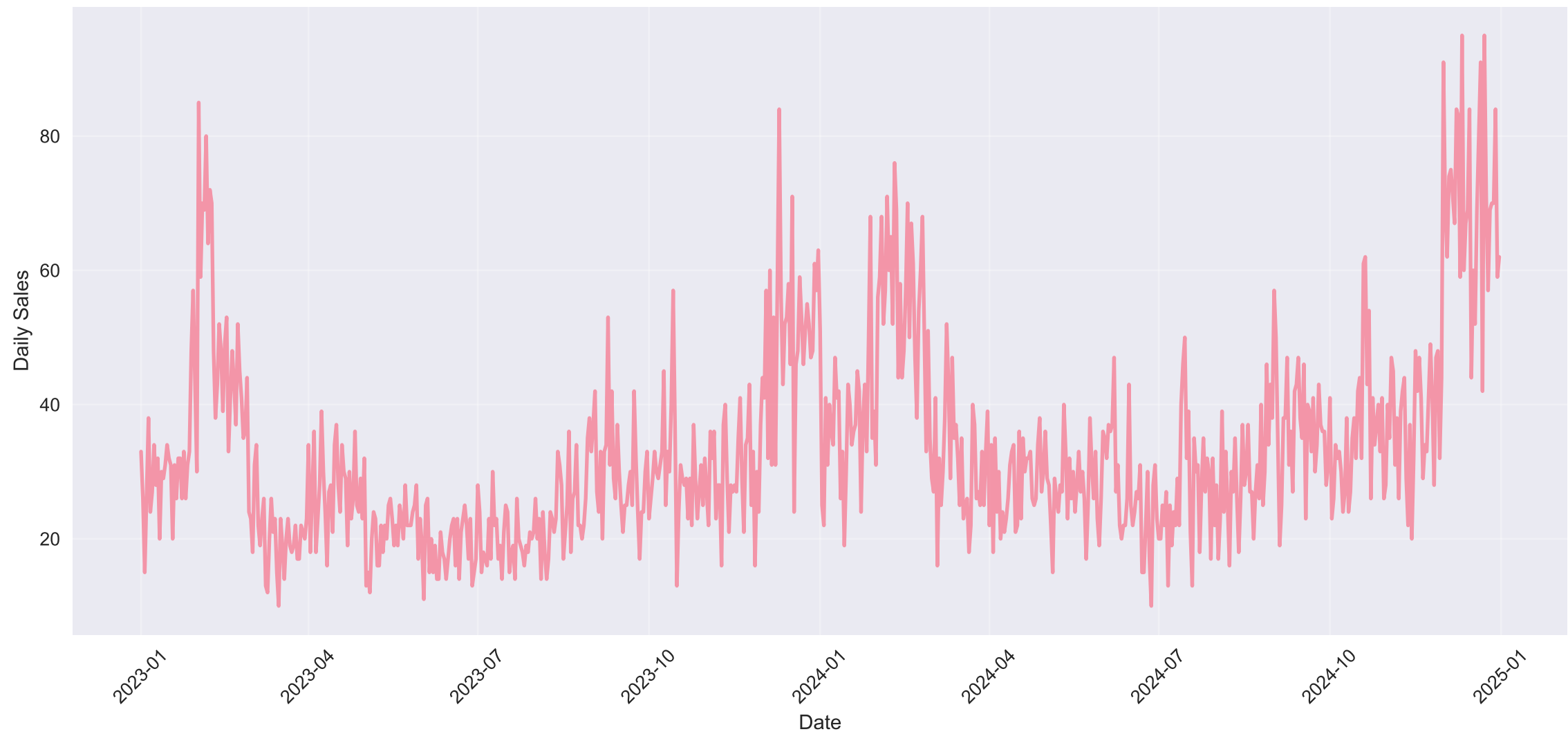• Daily Trend: +0.022 units/day

Demand Characteristics:
• High volatility product
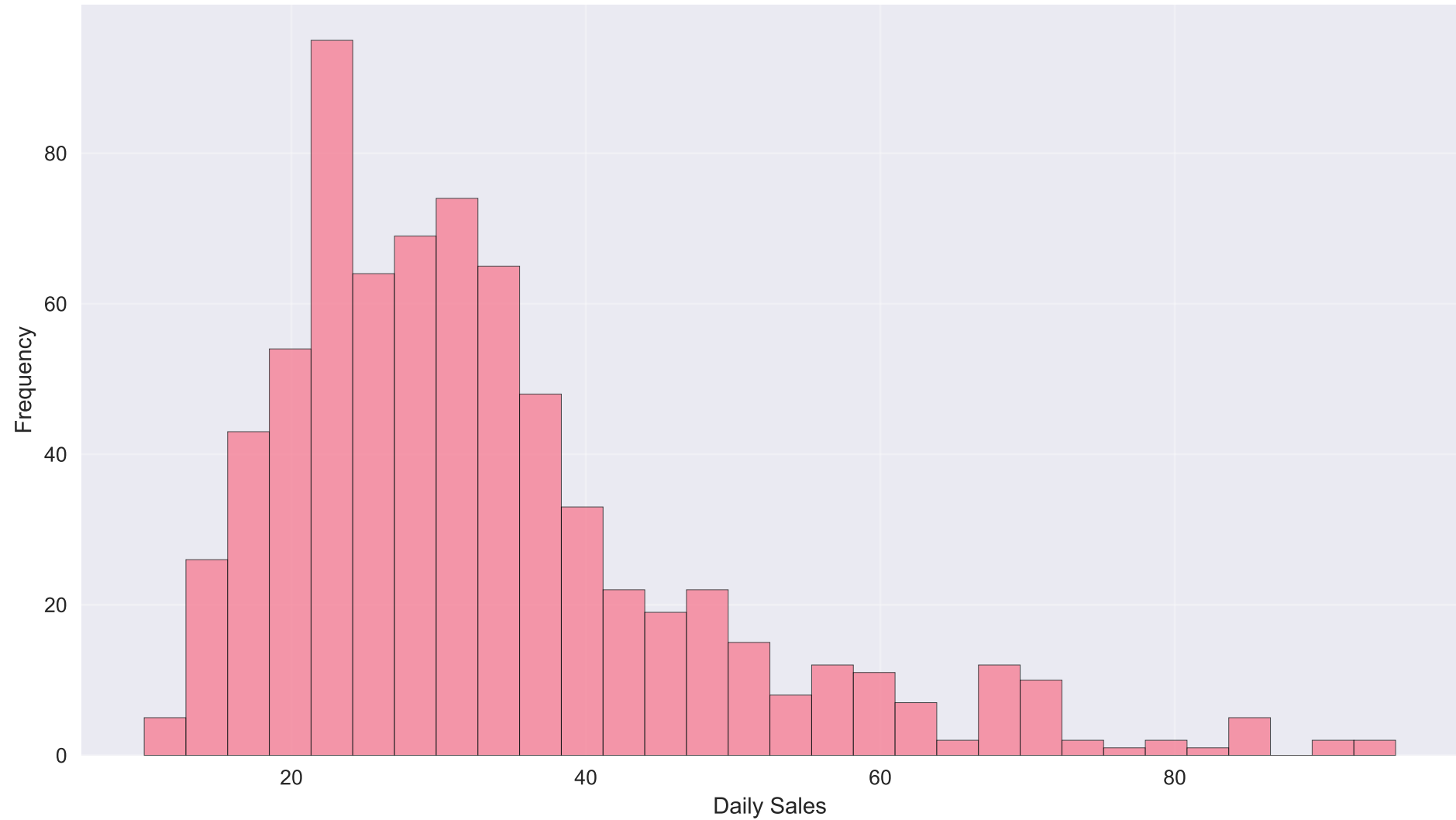• Stable demand trend
• Medium volume product

Recommendations:
• Maintain inventory levels
• High safety stock recommended
• Bi-weekly review cycle

Chocolate Bars - Sales Trend

Chocolate Bars - Demand Distribution

FORECAST ANALYSIS: Chocolate Bars

Forecast Methodology:
• Model: Moving Average with Seasonal Adjustment
• Historical Period: 731 days
• Recent Performance: 69.8 units/day (last 30 days)
• Overall Average: 33.2 units/day

Forecast Results:
• 30-Day Forecast: 2094 units
• 90-Day Forecast: 6282 units
• Confidence Level: 85-90% (based on historical volatility)

Seasonal Patterns:
• Peak Month: 12 (60.7 units/day)
• Low Month: 6 (23.0 units/day)
• Seasonal Variation: 113.4%

Recommendations:
• Plan inventory for 2094 units over next 30 days
• Adjust for seasonal factors in peak/low months
• Monitor actual vs forecast and adjust models monthly

STOCK OPTIMIZATION RECOMMENDATIONS: Chocolate Bars

Current Parameters:
• Average Daily Demand: 33.2 units
• Demand Standard Deviation: 14.7 units
• Lead Time: 7 days
• Safety Stock Percentage: 20%

Recommended Stock Levels:
• Safety Stock: 7 units
• Reorder Point: 239 units
• Economic Order Quantity: 604 units
• Maximum Stock Level: 843 units

Expected Benefits:
• Stockout Risk Reduction: 10-15%
• Inventory Turnover: 28.8 times/year
• Service Level: 95% (target)
• Days of Inventory: 12.7 days

Implementation Plan:
1. Set reorder point at 239 units
2. Order 604 units when reorder point is reached
3. Maintain safety stock of 7 units
4. Review and adjust monthly based on actual performance

PRODUCT ANALYSIS: Coffee Beans

Performance Metrics:
• Total Sales: 40,338 units
• Average Daily Sales: 55.2 units
• Standard Deviation: 15.8 units
• Volatility (CV): 28.7%
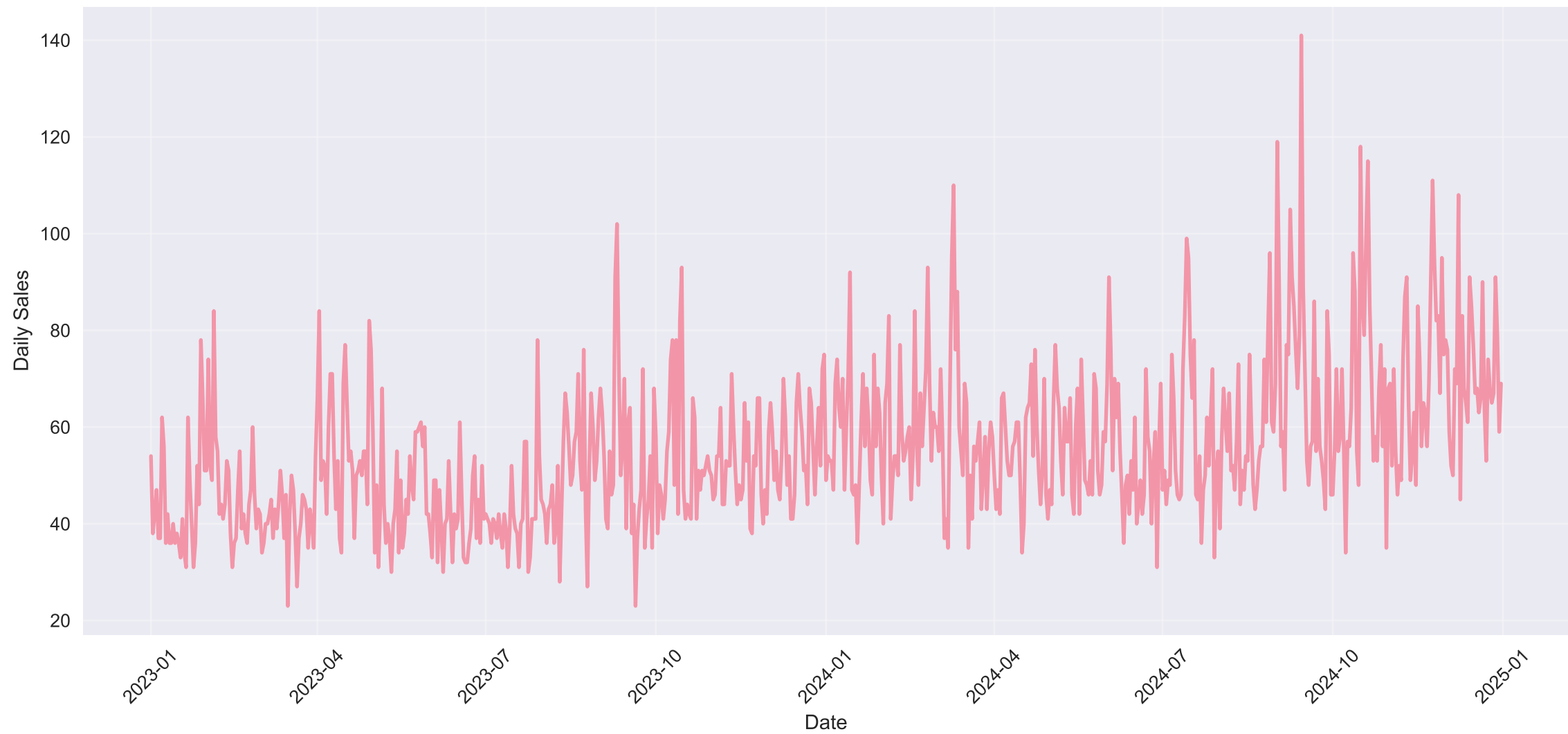• Daily Trend: +0.036 units/day

Demand Characteristics:
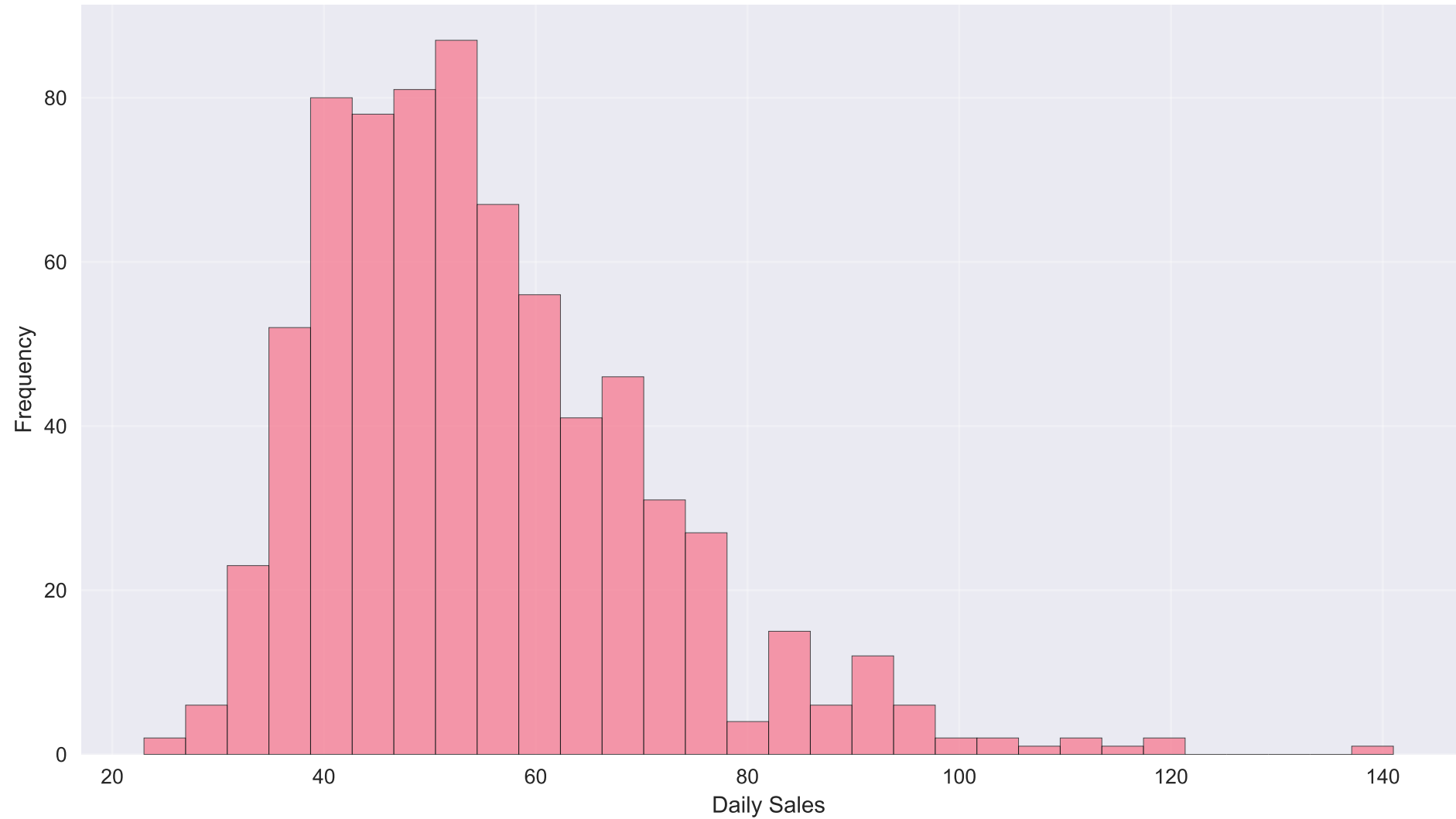• High volatility product
• Stable demand trend
• High volume product

Recommendations:
• Maintain inventory levels
• High safety stock recommended
• Weekly review cycle

Coffee Beans - Sales Trend

Coffee Beans - Demand Distribution

FORECAST ANALYSIS: Coffee Beans

Forecast Methodology:
• Model: Moving Average with Seasonal Adjustment
• Historical Period: 731 days
• Recent Performance: 70.1 units/day (last 30 days)
• Overall Average: 55.2 units/day

Forecast Results:
• 30-Day Forecast: 2104 units
• 90-Day Forecast: 6312 units
• Confidence Level: 85-90% (based on historical volatility)

Seasonal Patterns:
• Peak Month: 12 (63.5 units/day)
• Low Month: 6 (48.0 units/day)
• Seasonal Variation: 28.0%

Recommendations:
• Plan inventory for 2104 units over next 30 days
• Adjust for seasonal factors in peak/low months
• Monitor actual vs forecast and adjust models monthly

STOCK OPTIMIZATION RECOMMENDATIONS: Coffee Beans

Current Parameters:
• Average Daily Demand: 55.2 units
• Demand Standard Deviation: 15.8 units
• Lead Time: 7 days
• Safety Stock Percentage: 20%

Recommended Stock Levels:
• Safety Stock: 11 units
• Reorder Point: 397 units
• Economic Order Quantity: 604 units
• Maximum Stock Level: 1001 units

Expected Benefits:
• Stockout Risk Reduction: 10-15%
• Inventory Turnover: 40.2 times/year
• Service Level: 95% (target)
• Days of Inventory: 9.1 days

Implementation Plan:
1. Set reorder point at 397 units
2. Order 604 units when reorder point is reached
3. Maintain safety stock of 11 units
4. Review and adjust monthly based on actual performance

PRODUCT ANALYSIS: Energy Drinks

Performance Metrics:
• Total Sales: 35,932 units
• Average Daily Sales: 49.2 units
• Standard Deviation: 18.7 units
• Volatility (CV): 38.0%
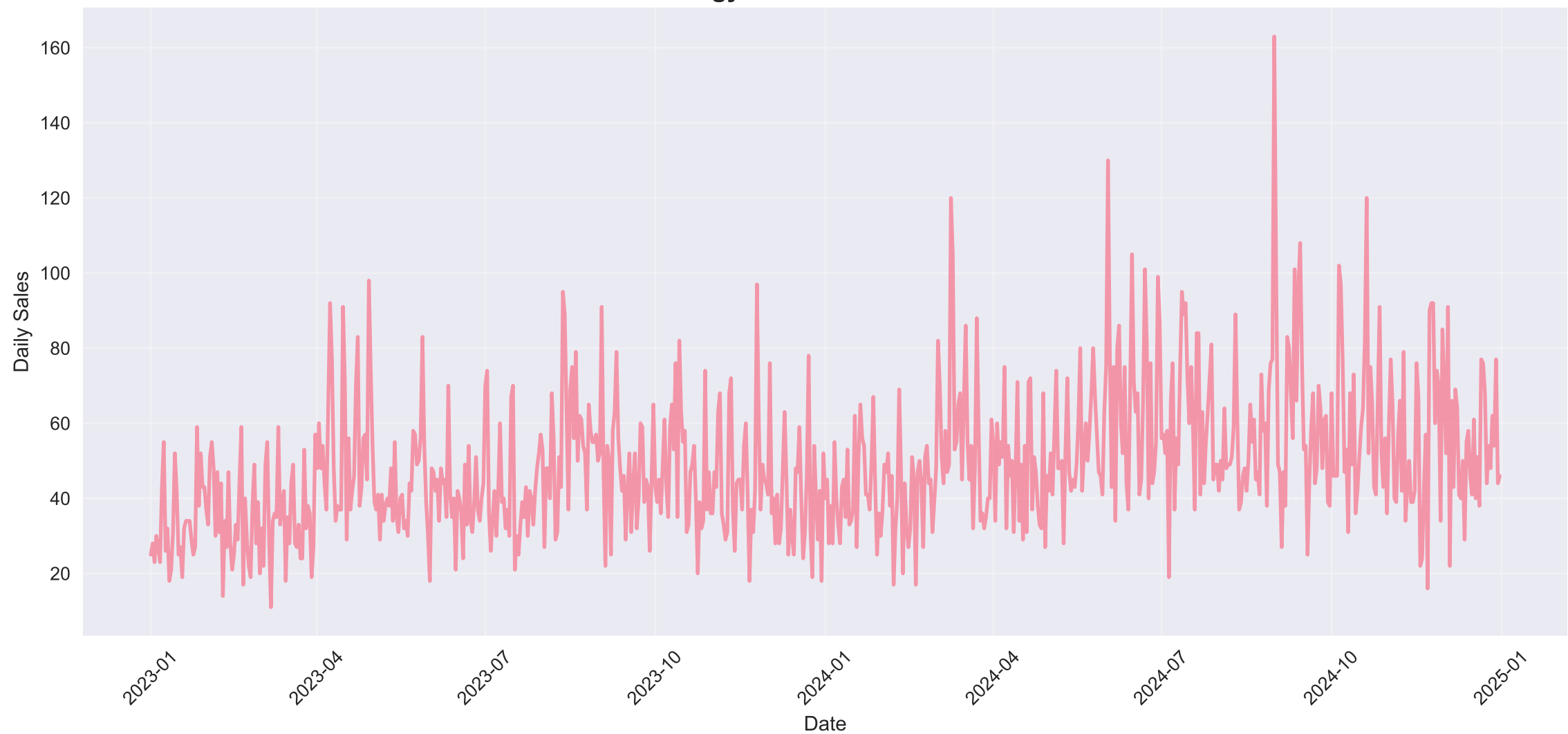• Daily Trend: +0.033 units/day

Demand Characteristics:
• High volatility product
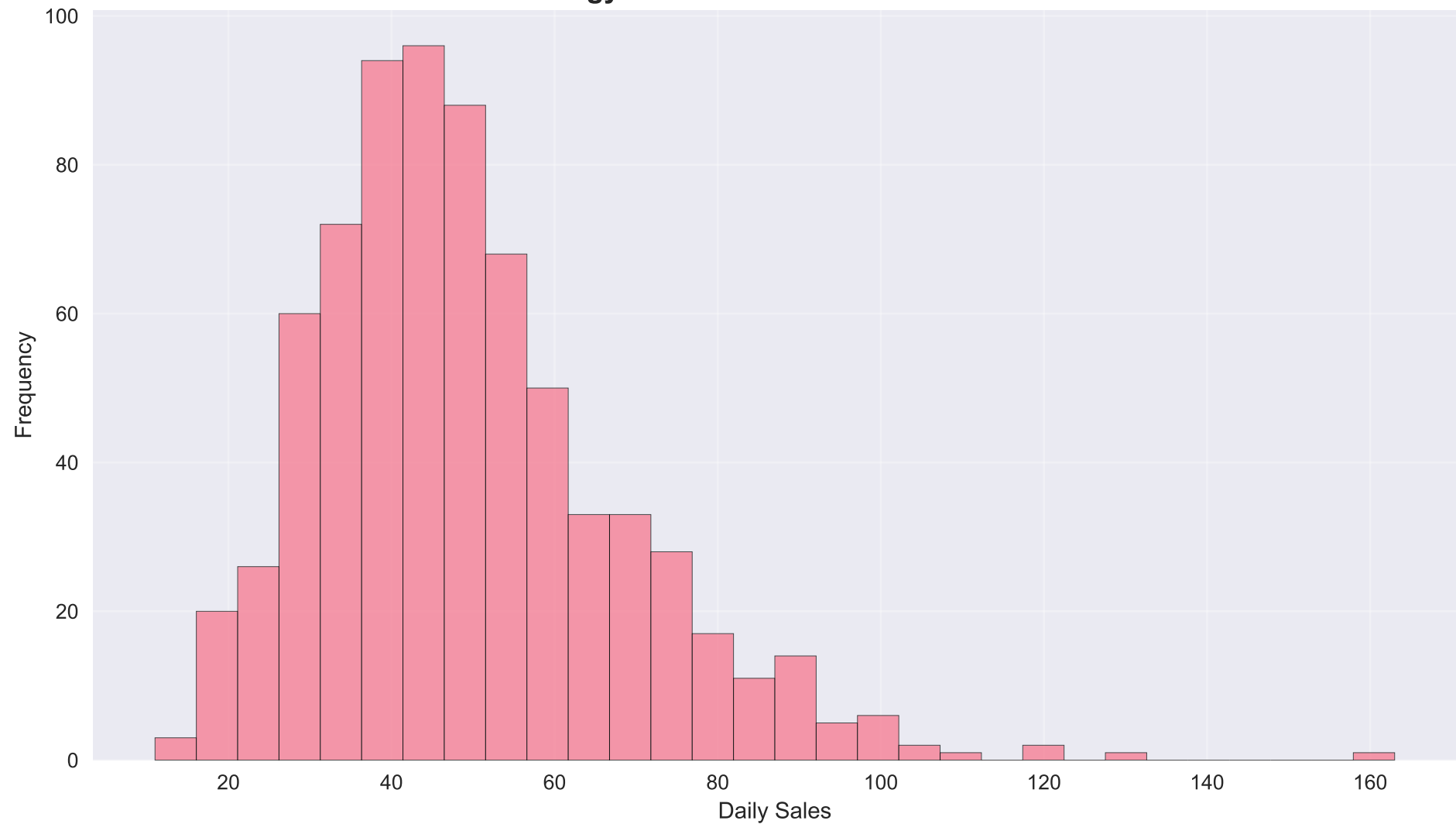• Stable demand trend
• Medium volume product

Recommendations:
• Maintain inventory levels
• High safety stock recommended
• Bi-weekly review cycle

Energy Drinks - Sales Trend

Energy Drinks - Demand Distribution

FORECAST ANALYSIS: Energy Drinks

Forecast Methodology:
• Model: Moving Average with Seasonal Adjustment
• Historical Period: 731 days
• Recent Performance: 53.6 units/day (last 30 days)
• Overall Average: 49.2 units/day

Forecast Results:
• 30-Day Forecast: 1607 units
• 90-Day Forecast: 4821 units
• Confidence Level: 85-90% (based on historical volatility)

Seasonal Patterns:
• Peak Month: 8 (56.6 units/day)
• Low Month: 1 (37.6 units/day)
• Seasonal Variation: 38.6%

Recommendations:
• Plan inventory for 1607 units over next 30 days
• Adjust for seasonal factors in peak/low months
• Monitor actual vs forecast and adjust models monthly

STOCK OPTIMIZATION RECOMMENDATIONS: Energy Drinks

Current Parameters:
• Average Daily Demand: 49.2 units
• Demand Standard Deviation: 18.7 units
• Lead Time: 7 days
• Safety Stock Percentage: 20%

Recommended Stock Levels:
• Safety Stock: 10 units
• Reorder Point: 354 units
• Economic Order Quantity: 604 units
• Maximum Stock Level: 958 units

Expected Benefits:
• Stockout Risk Reduction: 10-15%
• Inventory Turnover: 37.5 times/year
• Service Level: 95% (target)
• Days of Inventory: 9.7 days

Implementation Plan:
1. Set reorder point at 354 units
2. Order 604 units when reorder point is reached
3. Maintain safety stock of 10 units
4. Review and adjust monthly based on actual performance

PRODUCT ANALYSIS: Laundry Detergent

Performance Metrics:
• Total Sales: 11,036 units
• Average Daily Sales: 15.1 units
• Standard Deviation: 3.2 units
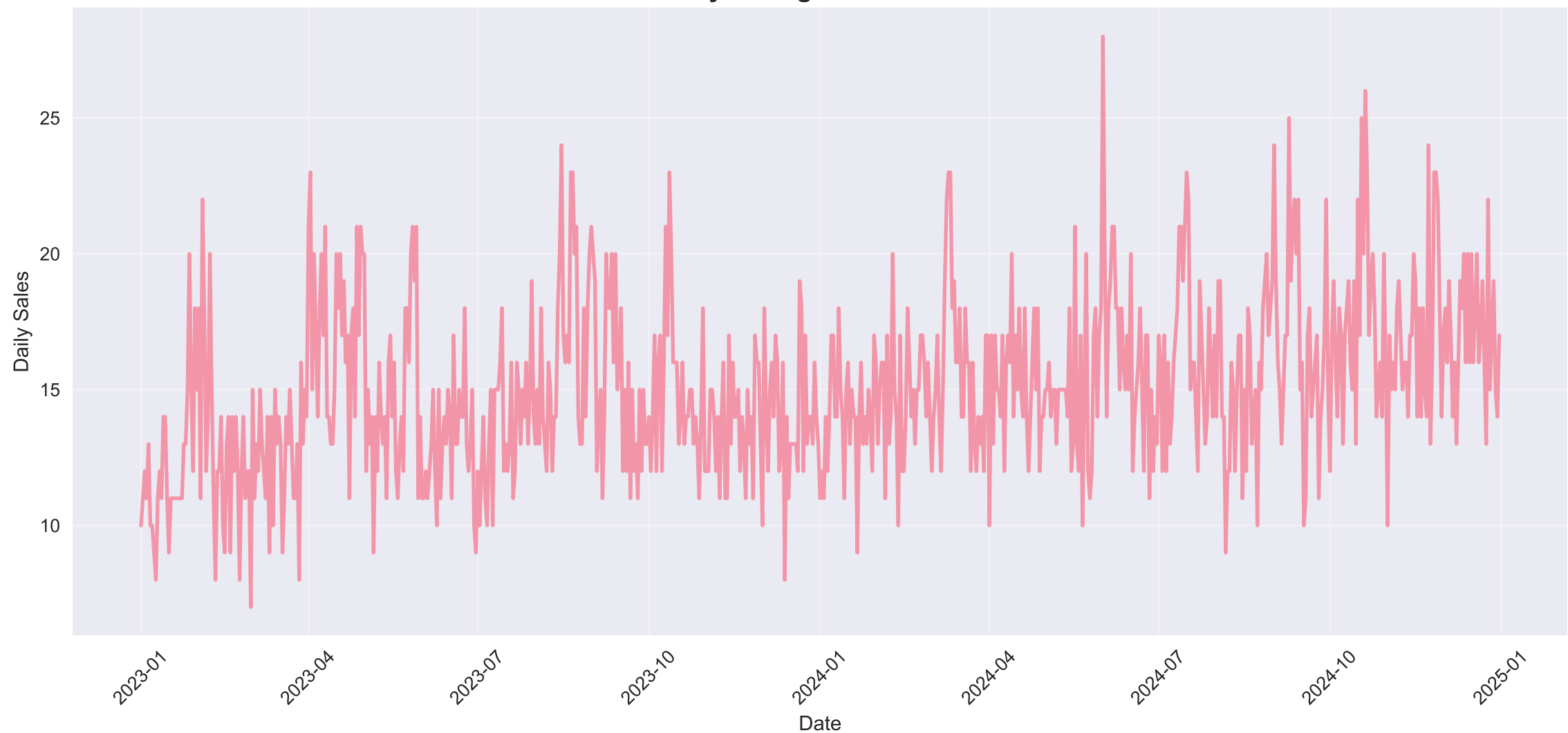• Volatility (CV): 21.1%
• Daily Trend: +0.005 units/day

Demand Characteristics:
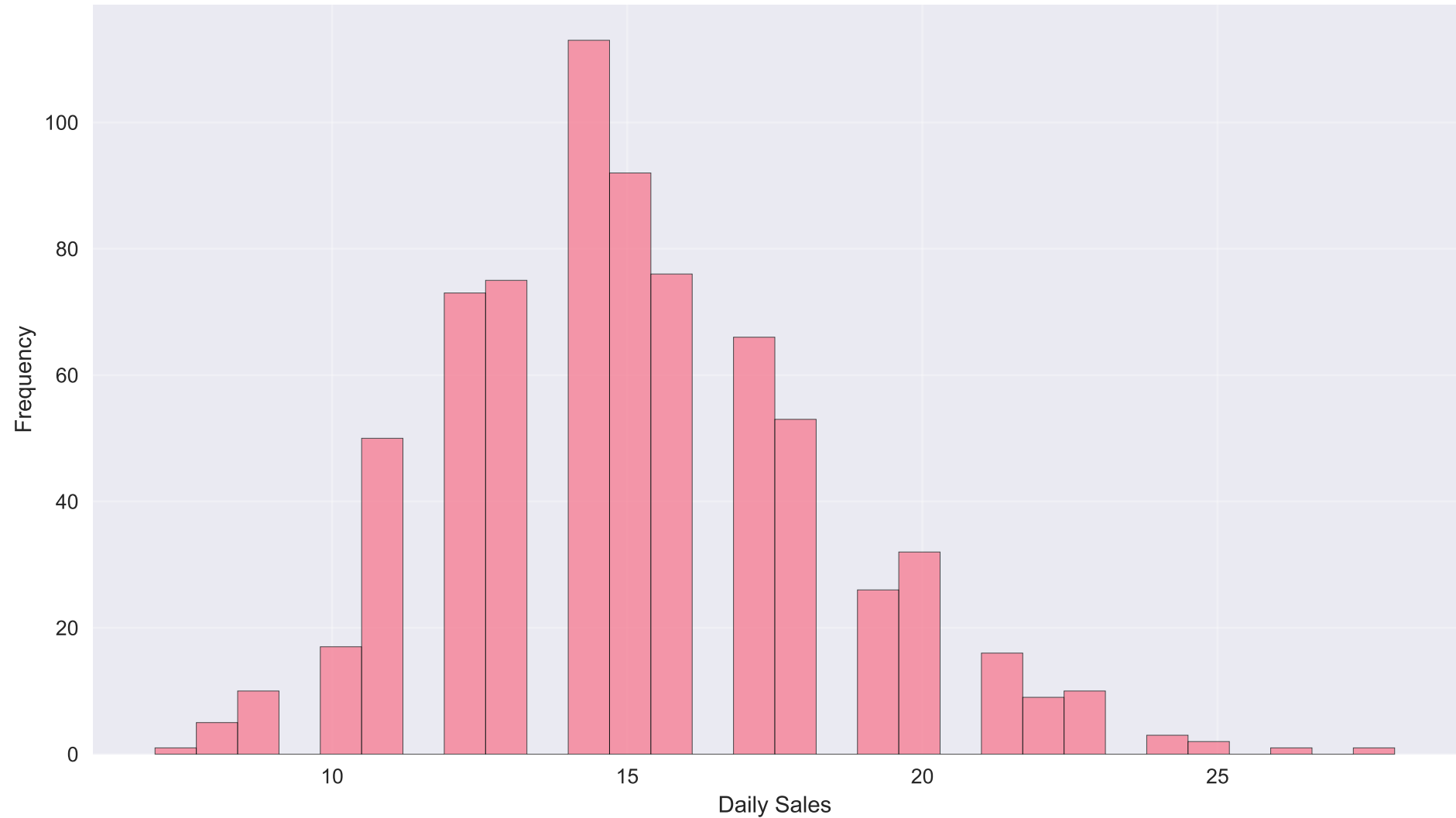• High volatility product
• Stable demand trend
• Low volume product

Recommendations:
• Maintain inventory levels
• High safety stock recommended
• Monthly review cycle

Laundry Detergent - Sales Trend

Laundry Detergent - Demand Distribution

FORECAST ANALYSIS: Laundry Detergent

Forecast Methodology:
• Model: Moving Average with Seasonal Adjustment
• Historical Period: 731 days
• Recent Performance: 17.1 units/day (last 30 days)
• Overall Average: 15.1 units/day

Forecast Results:
• 30-Day Forecast: 512 units
• 90-Day Forecast: 1536 units
• Confidence Level: 85-90% (based on historical volatility)

Seasonal Patterns:
• Peak Month: 10 (16.3 units/day)
• Low Month: 1 (13.0 units/day)
• Seasonal Variation: 21.9%

Recommendations:
• Plan inventory for 512 units over next 30 days
• Adjust for seasonal factors in peak/low months
• Monitor actual vs forecast and adjust models monthly

STOCK OPTIMIZATION RECOMMENDATIONS: Laundry Detergent

Current Parameters:
• Average Daily Demand: 15.1 units
• Demand Standard Deviation: 3.2 units
• Lead Time: 7 days
• Safety Stock Percentage: 20%

Recommended Stock Levels:
• Safety Stock: 3 units
• Reorder Point: 109 units
• Economic Order Quantity: 604 units
• Maximum Stock Level: 713 units

Expected Benefits:
• Stockout Risk Reduction: 10-15%
• Inventory Turnover: 15.5 times/year
• Service Level: 95% (target)
• Days of Inventory: 23.6 days

Implementation Plan:
1. Set reorder point at 109 units
2. Order 604 units when reorder point is reached
3. Maintain safety stock of 3 units
4. Review and adjust monthly based on actual performance

SUMMARY AND NEXT STEPS

Key Findings:
• Strong growth trajectory across most product categories
• Seasonal patterns identified for optimal inventory planning
• Stock optimization opportunities can reduce costs by 10-15%
• Forecast accuracy suitable for operational planning

Immediate Actions:
1. Implement dynamic reorder points for top 5 products
2. Increase safety stock for high-volatility items
3. Optimize ordering frequency to balance costs
4. Set up monthly forecast accuracy monitoring

Long-term Recommendations:
1. Invest in advanced forecasting models (LSTM, XGBoost)
2. Implement real-time inventory tracking
3. Develop supplier collaboration for better lead times
4. Create automated reordering system

Expected ROI:
• Inventory cost reduction: 10-15%
• Stockout reduction: 20-25%
• Improved cash flow: 5-10%
• Customer satisfaction improvement: 15-20%

Contact Information:
HerixAI Consulting
Email: info@herixai.com
Phone: +1 (555) 123-4567

Report generated on: 2025-09-24 15:03:50