Monthly Analysis Report for 2025-01

CO2 Analysis

Year: 2025

Month: 1

Statistics: {'Mean CO2': np.float64(6042.95), 'Median CO2': np.float64(5898.0), 'Standard Deviation': np.float64(1697.42), 'Min CO2': np.float64(2927.0), 'Max CO2': np.float64(9666.0)}

Diurnal Variations: {'Daytime Mean CO2': np.float64(6846.84), 'Nighttime Mean CO2': np.float64(5201.39), 'Daytime Variability': np.float64(1593.55), 'Nighttime Variability': np.float64(1370.54)}

Trends: {'Weekly Trend': {Timestamp('2025-01-05 00:00:00'): 7019.38, Timestamp('2025-01-12 00:00:00'): 6730.1, Timestamp('2025-01-19 00:00:00'): 6625.79, Timestamp('2025-01-26 00:00:00'): 5743.0, Timestamp('2025-02-02 00:00:00'): 4026.62}, 'Daily Trend': {Timestamp('2025-01-01 00:00:00'): 7660.62, Timestamp('2025-01-02 00:00:00'): 6155.75, Timestamp('2025-01-03 00:00:00'): 5344.0, Timestamp('2025-01-04 00:00:00'): nan, Timestamp('2025-01-05 00:00:00'): nan, Timestamp('2025-01-06 00:00:00'): 8404.5, Timestamp('2025-01-07 00:00:00'): 6895.83, Timestamp('2025-01-08 00:00:00'): 7820.6, Timestamp('2025-01-09 00:00:00'): 6717.25, Timestamp('2025-01-10 00:00:00'): 6314.5, Timestamp('2025-01-11 00:00:00'): 5449.75, Timestamp('2025-01-12 00:00:00'): 6138.0, Timestamp('2025-01-13 00:00:00'): 7466.6, Timestamp('2025-01-14 00:00:00'): 7801.4, Timestamp('2025-01-15 00:00:00'): 6572.75, Timestamp('2025-01-16 00:00:00'): 6728.0, Timestamp('2025-01-17 00:00:00'): 5451.5, Timestamp('2025-01-18 00:00:00'): 6159.8, Timestamp('2025-01-19 00:00:00'): 6083.83, Timestamp('2025-01-20 00:00:00'): 6200.0, Timestamp('2025-01-21 00:00:00'): 6534.5, Timestamp('2025-01-22 00:00:00'): 6577.8, Timestamp('2025-01-23 00:00:00'): 5484.0, Timestamp('2025-01-24 00:00:00'): 5655.0, Timestamp('2025-01-25 00:00:00'): 5488.17, Timestamp('2025-01-26 00:00:00'): 4246.25, Timestamp('2025-01-27 00:00:00'): 4359.75, Timestamp('2025-01-28 00:00:00'): 4477.75, Timestamp('2025-01-29 00:00:00'): 4041.25, Timestamp('2025-01-30 00:00:00'): 3548.0, Timestamp('2025-01-31 00:00:00'): 3826.0}}

Anomalies: [{'record': 9502.0}, {'record': 9666.0}]

Weight Analysis

Year: 2025

Month: 1

Statistics: {'Maximum Weight': np.float64(33.07), 'Minimum Weight': np.float64(24.07), 'Mean Weight': np.float64(26.38)}

Daily Weight Fluctuations: [{'min': 26.4, 'max': 28.72, 'mean': 26.958, 'fluctuation_range': 2.3200000000000003}, {'min': 26.37, 'max': 28.04, 'mean': 26.792, 'fluctuation_range':

1.6699999999999982}, {'min': 24.9, 'max': 26.29, 'mean': 25.9375, 'fluctuation_range': 1.3900000000000006}, {'min': 24.52, 'max': 33.07, 'mean': 27.5675, 'fluctuation_range': 8.55}, {'min': 26.21, 'max': 27.22, 'mean': 26.5, 'fluctuation_range': 1.009999999999998}, {'min': 24.94, 'max': 26.4, 'mean': 25.9175, 'fluctuation_range': 1.459999999999973}, {'min': 24.07, 'max': 26.43, 'mean': 25.9, 'fluctuation_range': 2.3599999999999994}]

Hourly Patterns: {'Daytime Mean Weight': np.float64(26.31), 'Nighttime Mean Weight': np.float64(26.47)}

Weight Trend for 2025-01
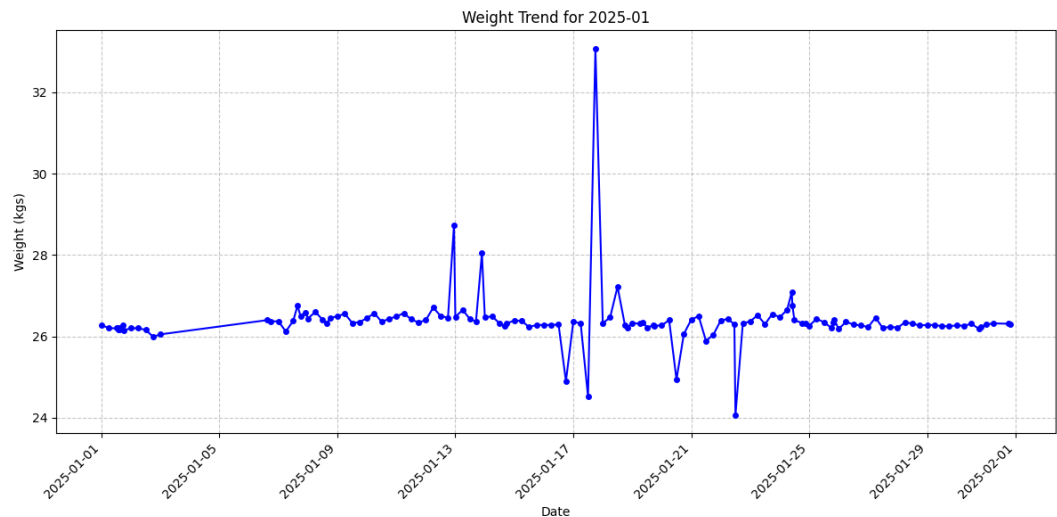
Temperature Analysis

Year: 2025

Month: 1

Temperature Statistics: {'Exterior': {'Lowest': np.float64(18.6), 'Highest': np.float64(29.2), 'Average': np.float64(23.5)}, 'Interior': {'Lowest': np.float64(27.8), 'Highest': np.float64(35.4), 'Average': np.float64(31.0)}}

Standard Deviation: {'Exterior': np.float64(2.6), 'Interior': np.float64(1.8)}

**Correlation:** {'Coefficient (r)': np.float64(0.65), 'p-value': np.float64(0.0)}

has_plot: True

Temperature Trend for 2025-01
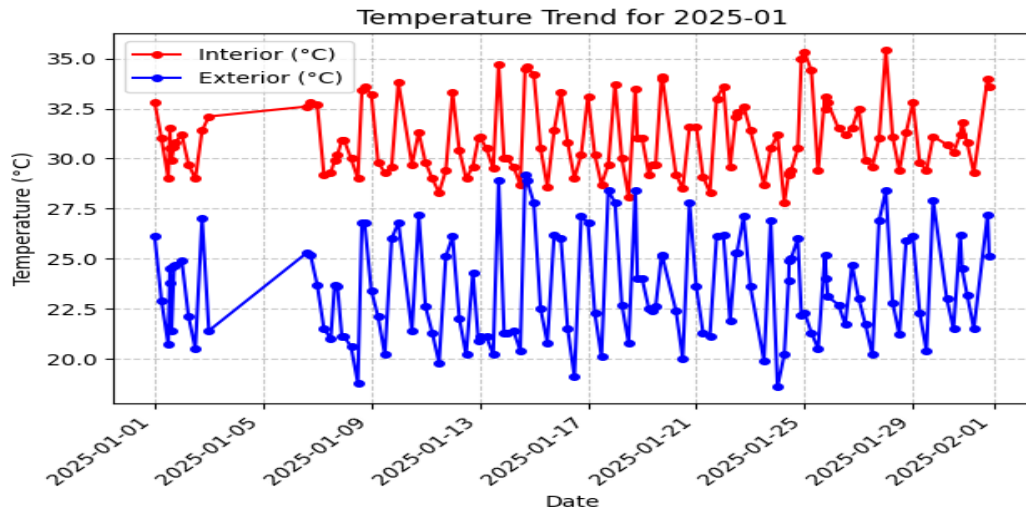
Humidity Analysis

Year: 2025

Month: 1

Humidity Insights: {'Interior Humidity (%)': {'Average': np.float64(79.02), 'Min': np.float64(72.8), 'Max': np.float64(84.6), 'Standard Deviation': np.float64(2.85), 'Range': np.float64(11.799999999999997)}, 'Exterior Humidity (%)': {'Average': np.float64(80.77), 'Min': np.float64(49.1), 'Max': np.float64(98.4), 'Standard Deviation': np.float64(11.32), 'Range': np.float64(49.300000000000004)}}

Correlation Analysis: {'Interior Humidity vs Interior Temperature (°C)': np.float64(nan), 'Exterior Humidity vs Exterior Temperature (°C)': np.float64(nan), 'Interior Humidity vs Hive Weight (kg)': np.float64(0.04034930307247932), 'Exterior Humidity vs Hive Weight (kg)': np.float64(-0.03006508944924481)}

Humidity Trend for 2025-01
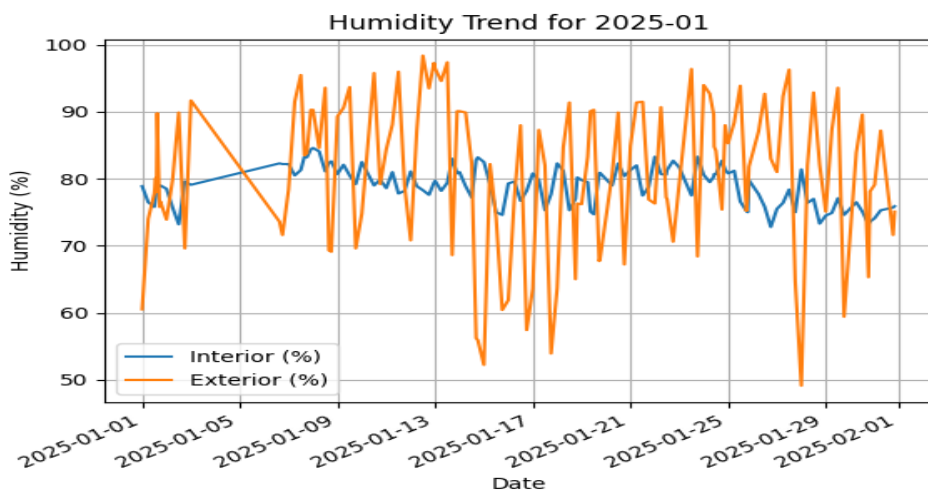
Correlation Analysis

CO■ vs Weight: Pearson: nan, Spearman: nan

Temperature vs Weight: Pearson: nan, Spearman: nan

Humidity vs Weight: Pearson: nan, Spearman: nan

Plot not found: combined_trends.png

Plot not found: correlation_heatmap.png