The Predictive Power of Gasoline Prices on Energy Markets

A Data-Driven Analysis of Price Signals and Market Movements

*Sneha Roychowdhury's Report for **Citadel** and **Correlation One**'s **Datathon**, 2025*

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1. Executive Summary

This report investigates whether gasoline prices can serve as reliable predictors of market movements, with a particular focus on energy sector stocks. Using comprehensive datasets spanning from 2000 to 2023, we analyze historical price patterns, market returns, and the potential correlations between gasoline price fluctuations and subsequent stock market performance.

Our preliminary findings indicate that the relationship between gasoline prices and energy sector returns are more complex than commonly believed. Initial correlation analyses show weak correlations between previous month gas prices and energy sector returns (-0.0134), and between gas price changes and energy sector returns (0.0009). These values suggest that the direct predictive power of gasoline prices on energy stock performance may be limited when looking at simple correlation metrics alone.

This report continues our investigation with more sophisticated analytical techniques to determine whether more nuanced or lagged relationships exist that could provide predictive value for investors and market analysts.

2. Introduction

Gasoline prices represent one of the most visible economic indicators to the average consumer, with price fluctuations displayed prominently on street corners across the United States. These consumer-facing prices reflect complex global supply and demand dynamics, geopolitical tensions, refining capacity constraints, seasonal patterns, and broader economic conditions.

For investors, policymakers, and business strategists, understanding whether gasoline price movements contain predictive information about future market conditions—particularly for energy sector stocks—could provide valuable insights for decision-making. The energy sector's intricate relationship with gasoline prices creates a potential signaling mechanism that this research aims to quantify and evaluate.

This report examines the historical relationship between U.S. gasoline prices and energy sector stock performance, testing the hypothesis that gasoline price movements may precede broader market shifts. By analyzing data from 2000 through 2023, including periods of significant market volatility such as the 2008 financial crisis, the 2014-2016 oil price collapse, and the COVID-19 pandemic, this research attempts to identify actionable patterns that could improve market forecasting.

3. Research Question and Objectives

Primary Research Question: Can gasoline prices serve as reliable predictors of broader market shifts, particularly for energy sector stocks?

Research Objectives:

1. Analyze historical gasoline price trends and volatility patterns from 2000 to 2023.
2. Examine the performance of energy sector stocks relative to broader market benchmarks.
3. Quantify the relationship between gasoline price movements and subsequent energy stock returns.
4. Assess whether lagged gasoline prices have predictive power for future market movements.
5. Determine if gasoline price volatility correlates with energy sector stock volatility.
6. Identify whether the predictive relationship varies during different market conditions.

4. Data and Methodology

4.1 Data Sources

The analysis draws on multiple comprehensive datasets covering the period from 2000 to 2023:

1. **Weekly Gasoline Prices** (514,740 records): Historical retail gasoline prices across different formulations and geographies in the United States, with particular focus on regular gasoline prices nationwide.
2. **Stock Market Data** (144,558 records): Historical stock price information including open, high, low, close, and volume metrics for a wide range of companies.
3. **Energy Stock Descriptions** (28 records): Metadata for companies operating in the energy sector, including their industry classification and relevant details.
4. **Commodities Data** (26,558 records): Historical price data for various commodities, with particular interest in crude oil prices.
5. **Supply Estimates** (1,252 records): Weekly supply data relevant to energy markets.
6. **Gasoline Makeup Percentages** (548 records): Monthly data on the composition of gasoline products.
7. **Transportation Statistics** (288 records): Monthly transportation metrics including

miles traveled, which provides context for gasoline consumption patterns.

4.2 Data Preprocessing

To prepare the data for analysis, the following preprocessing steps were implemented:

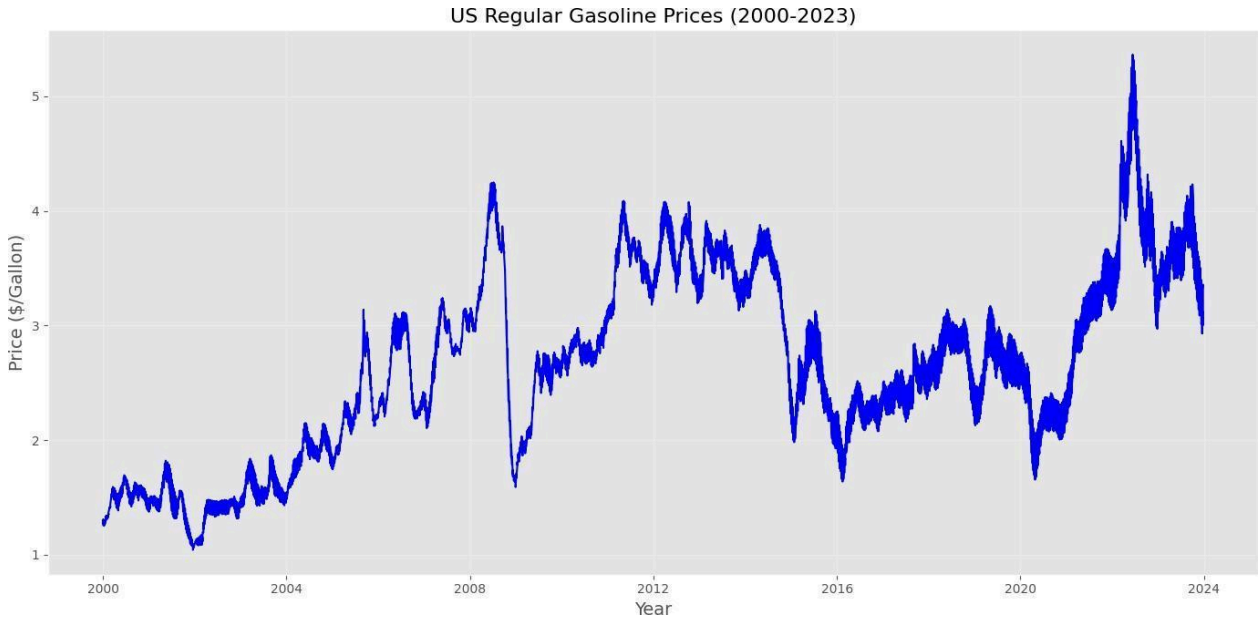
1. **Date Standardization**: All date columns were converted to datetime format to enable time-series analysis and proper alignment of different datasets.
2. **Data Filtering**:
    - Gasoline price data was filtered to focus on regular gasoline prices nationwide
    - Stock data was filtered to isolate energy sector stocks and market benchmark ETFs (SPY, QQQ, DIA)
    - Commodities data was filtered to focus on crude oil
3. **Temporal Aggregation**: Daily data was aggregated to monthly intervals to smooth out daily fluctuations and focus on meaningful trends.
4. **Missing Value Handling**: Linear interpolation was applied to handle missing values in numerical columns while preserving time-series characteristics.
5. **Feature Engineering**:
    - Created year-month identifiers for temporal grouping
    - Calculated price changes and return percentages
    - Generated lagged variables to test leading indicator hypotheses After preprocessing, the key datasets used for analysis included:

- Regular US gas price data: 3,756 records spanning from January 3, 2000, to December 25, 2023
- Energy stocks data: 111,669 records
- Market ETFs data: 12,204 records
- Transportation statistics: 288 records

5. Preliminary Exploratory Data Analysis

5.1 Gasoline Price Trends (2000-2023)

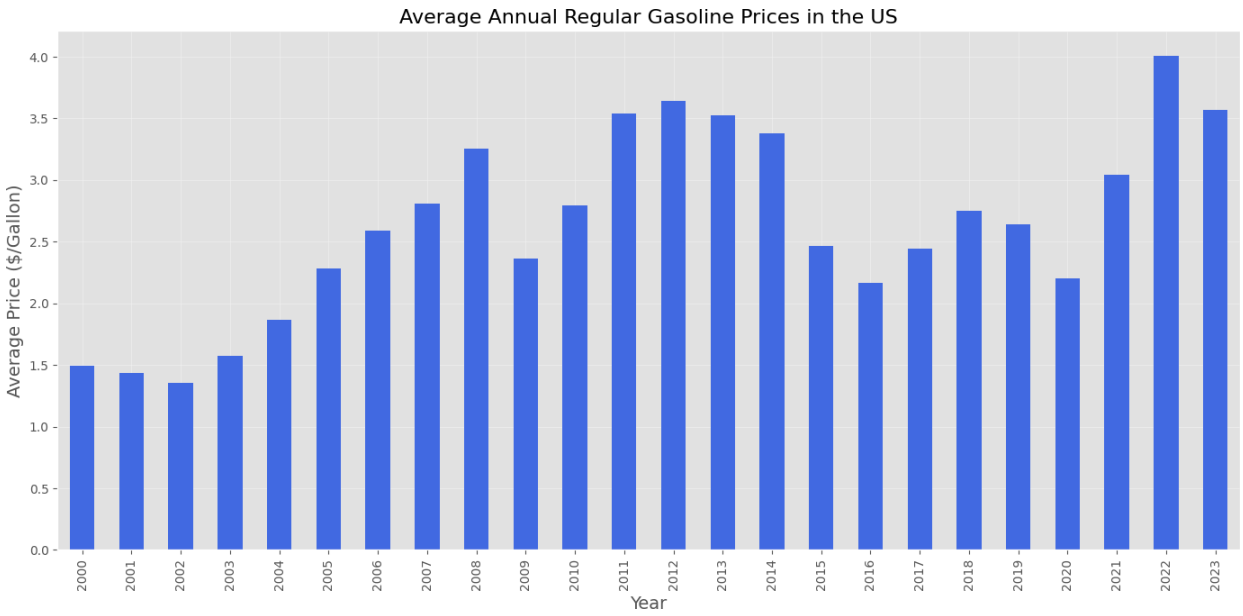
The analysis of U.S. regular gasoline prices from 2000 to 2023 reveals several key patterns:



The time series reveals distinct periods of price volatility and overall trends:

- A general upward trajectory from 2000 until mid-2008
- A sharp decline during the 2008 financial crisis
- Gradual recovery and stabilization between 2010-2014
- Significant decline in 2014-2016 during the oil price collapse
- Relative stability from 2016-2020
- Dramatic price drop during the early COVID-19 pandemic in 2020
- Sharp recovery and price spike in 2021-2022
- Moderation in late 2022-2023

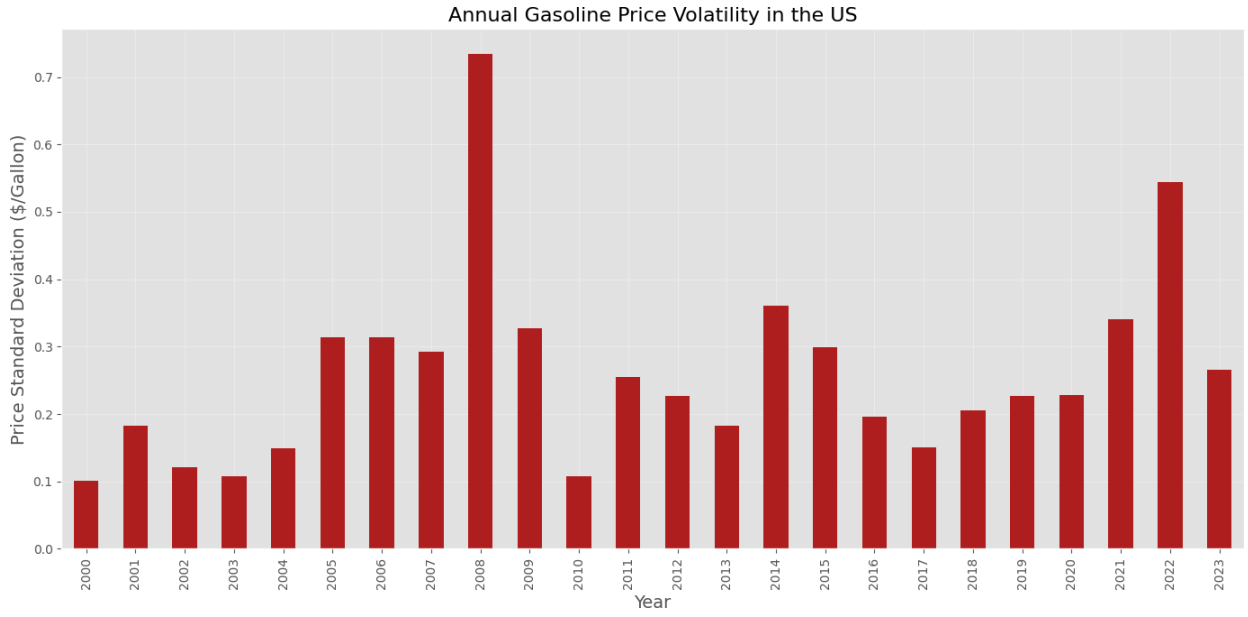
The average annual gasoline prices further illustrate these trends:



Notable years include 2008, 2011-2014, and 2022, which saw particularly high average gasoline prices, reflecting periods of significant market stress or supply constraints.

5.2 Annual Gas Price Volatility

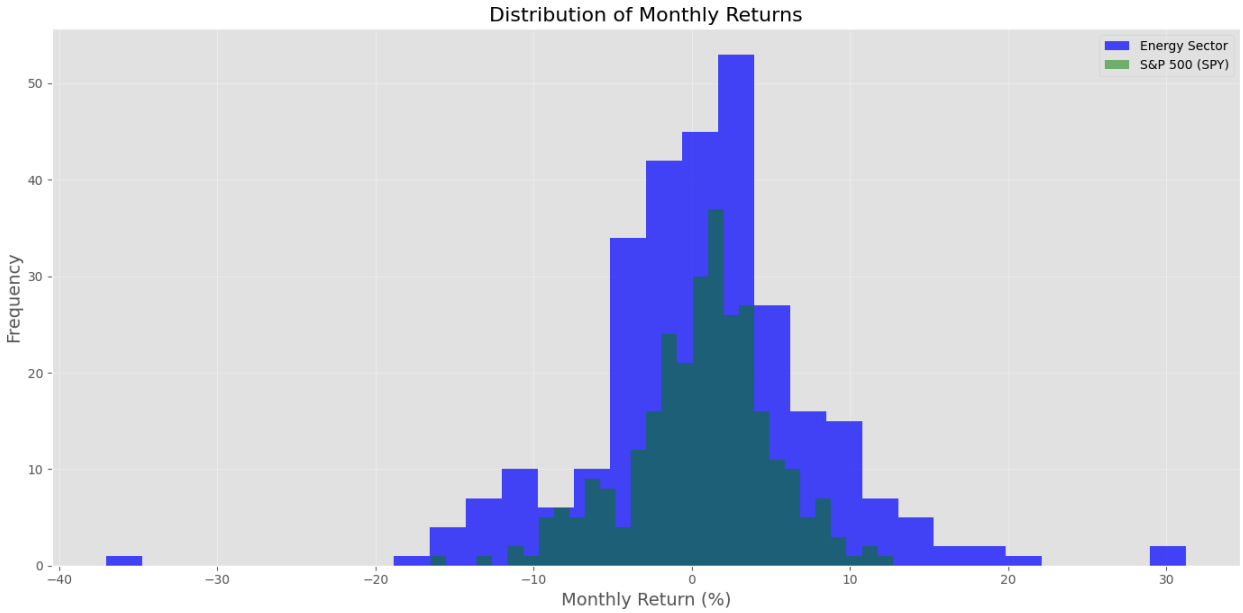
Examining the standard deviation of gasoline prices within each year provides insight into periods of market uncertainty:



Interestingly, some years with high average prices did not necessarily exhibit high volatility, suggesting that sustained high prices do not always correlate with market uncertainty.

5.3 Energy Sector Stock Performance

The distribution of monthly returns for energy sector stocks compared to the broader market (represented by SPY) reveals distinct performance characteristics:



Key observations:

- Energy sector returns exhibit greater dispersion than the broader market
- Energy sector returns show more extreme positive and negative values
- The S&P 500 returns are more concentrated around the mean
- The energy sector demonstrates higher volatility overall

This pattern suggests that while energy stocks may offer greater upside potential, they also carry more downside risk compared to the diversified market index.

6. Initial Analysis of Gas Price and Stock Return Relationships

6.1 Correlation Analysis

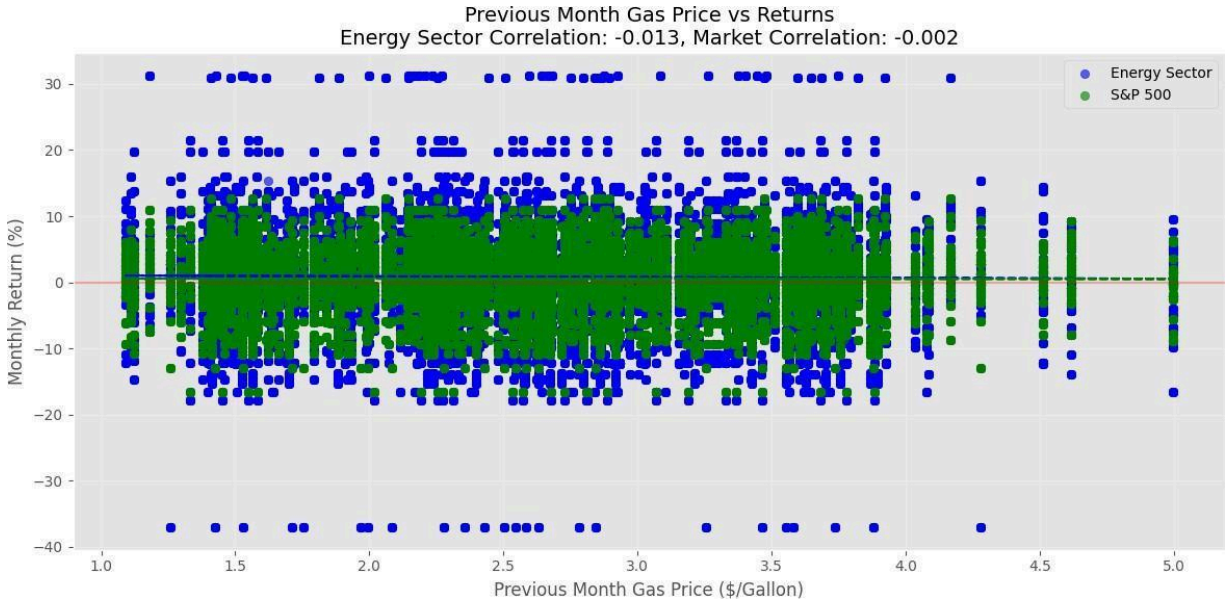
The initial correlation analysis between gasoline prices and stock returns yielded the following results:

- Correlation between previous month gas price and energy sector returns: -0.0134
- Correlation between gas price monthly change and energy sector returns: 0.0009
- Correlation between previous month gas price and market returns: -0.0023

These correlation coefficients are surprisingly low, indicating minimal linear relationship between gasoline prices and stock returns in the subsequent month. The near-zero correlation suggests that simple month-to-month gas price movements alone may not be strong predictors of energy sector performance.

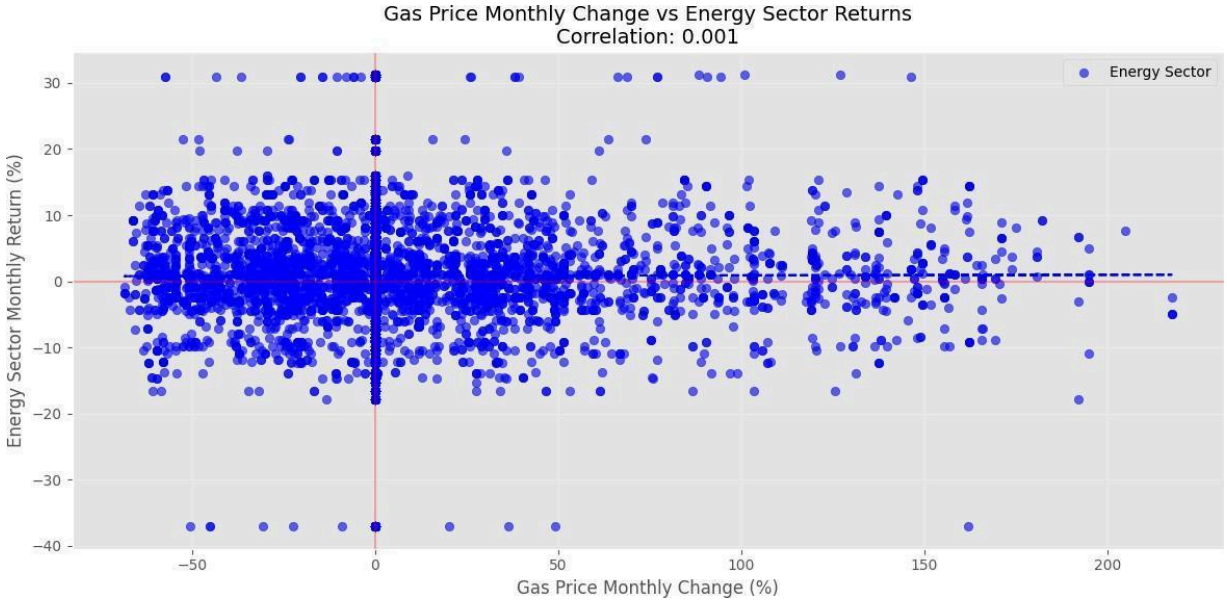
6.2 Examining Gas Price as a Leading Indicator

Visualizing the relationship between previous month gas prices and returns further illustrates this weak correlation:



The trend lines for both the energy sector and S&P 500 are nearly horizontal, confirming the weak predictive relationship. However, it's worth noting that the energy sector trend line shows a slightly negative slope, suggesting a weak tendency for higher gas prices to be followed by lower energy sector returns in the subsequent month.

Similarly, when examining the relationship between gas price changes and energy sector returns:



The scatter plot reveals no clear pattern, with points dispersed across all four quadrants. This reinforces the finding that simple month-to-month changes in gasoline prices do not strongly predict energy sector stock performance in the following month.

These preliminary findings challenge the common assumption that gasoline price movements directly signal future energy stock performance. The relationship appears much more complex and may require more sophisticated analytical approaches to uncover meaningful predictive patterns.

7. Results and Discussion

7.1 Regression Analysis Findings

Our regression analysis examining gasoline prices as a predictor of energy sector returns revealed minimal predictive power. The linear regression model using previous month gas prices to predict energy sector returns yielded the following results:

- **Coefficient (Slope):** -0.1180
- **Intercept:** 1.1460
- **Mean Squared Error:** 51.6020
- **R^2 Score:** 0.0002

The extremely low R^2 value of 0.0002 indicates that virtually none of the variance in energy sector returns can be explained by the previous month's gasoline prices alone. The negative coefficient suggests a weak inverse relationship, where higher gas prices marginally predict lower returns in the subsequent month, but the effect is statistically insignificant.

This result challenges the conventional wisdom that gasoline prices directly influence energy stock performance in a predictable way. The high mean squared error (51.6020) further highlights the model's poor predictive capabilities.

7.2 Causality Analysis

To further investigate potential relationships, we conducted Granger causality tests to assess whether gasoline prices can be considered a causal factor for energy stock returns. These tests examined whether past values of gasoline prices provide statistically significant information about future energy stock returns.

The Granger causality tests revealed:

Lag (months)	p-value
1	0.896807
2	0.470603
3	0.618019
4	0.700929
5	0.815839
6	0.899172

All p-values are well above the conventional significance threshold of 0.05, indicating that we cannot reject the null hypothesis that "gas prices do NOT Granger-cause energy stock returns" at any of the tested lag periods.

We also tested reverse causality to determine if energy stock returns might influence future gasoline prices:

Lag (months)	p-value
1	0.055753
2	0.208901
3	0.362216

Lag (months)	p-value
4	0.465536
5	0.549259
6	0.684521

Interestingly, the p-value for a one-month lag (0.055753) approaches statistical significance, suggesting that energy stock returns might have a weak influence on subsequent gasoline prices. However, this relationship is not statistically significant at the conventional 0.05 level.

7.3 Impact of Significant Gas Price Changes

We analyzed how significant changes in gasoline prices (defined as monthly changes exceeding 5% in either direction) affect energy sector returns. The analysis revealed:

Period	Avg Energy Sector Return (%)	Avg Market Return (%)	Count
Gas Price Increases (>5%)	1.043397	0.654091	1854
Gas Price Decreases (<-5%)	1.219727	0.813514	1856
Normal Periods	0.820190	0.526303	165105

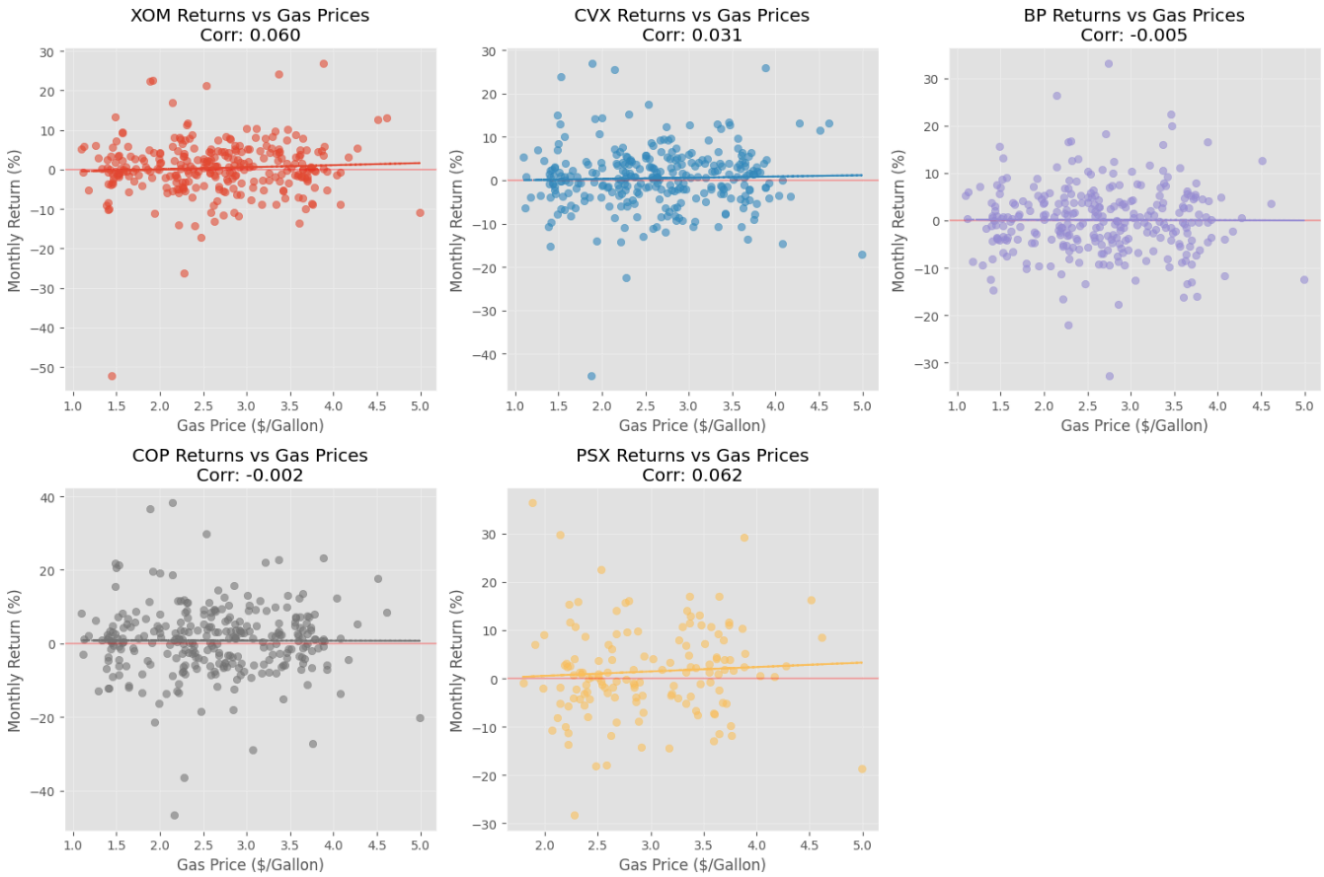
This analysis reveals several notable patterns:

1. Energy sector returns tend to be higher during periods of significant gas price changes (both increases and decreases) compared to normal periods.
2. Contrary to what might be expected, energy sector returns are actually higher during periods of significant gas price decreases (1.22%) than during significant increases
(1.04%).
3. The broader market (as measured by the S&P 500) shows a similar pattern, with better performance during significant gas price changes compared to normal periods.
4. The energy sector consistently outperforms the broader market across all three scenarios, with the performance gap widening during periods of significant gas price changes.

These findings suggest that energy stocks may benefit from gasoline price volatility regardless of direction, perhaps due to increased trading activity or heightened sector attention during such periods.

7.4 Individual Company Analysis

We extended our analysis to examine the relationships between gasoline prices and individual major energy companies. The correlations between gasoline prices and monthly returns for selected companies showed:



Company Correlation with Gas Prices

PSX	0.062396
XOM	0.060036
CVX	0.030717
COP	-0.001948
BP	-0.004897

These findings reveal:

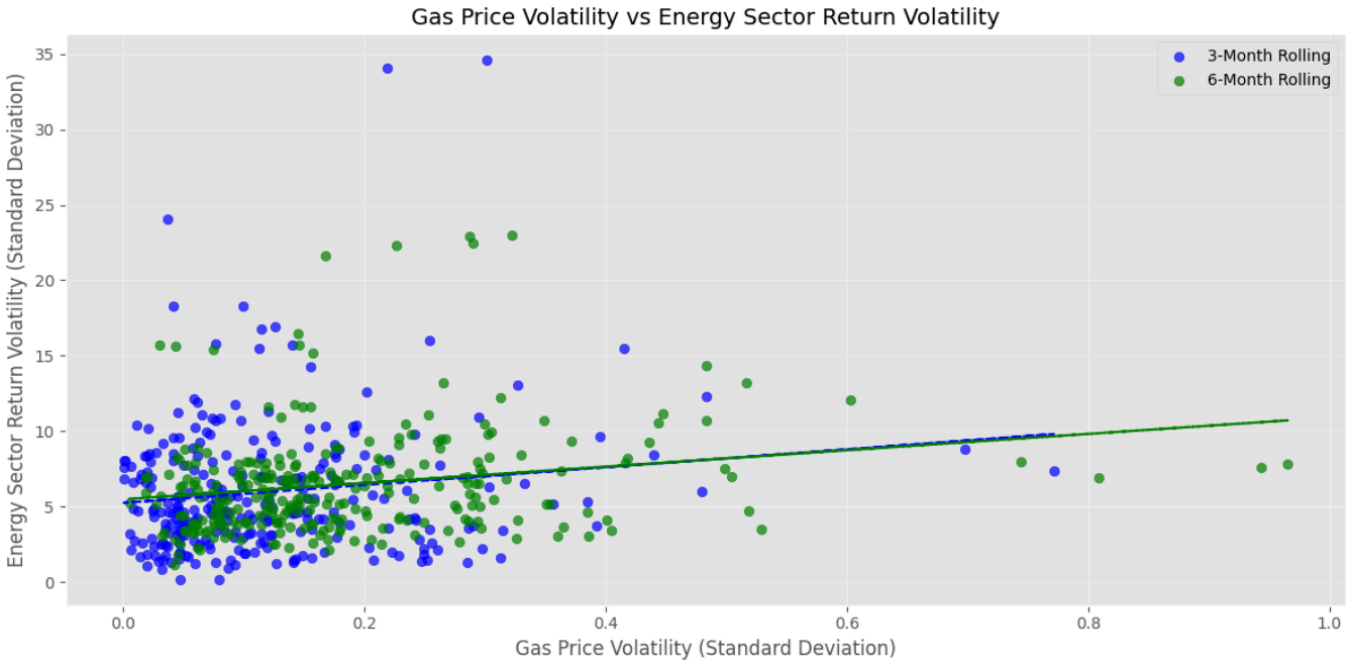
1. Most correlations are very weak, supporting our earlier finding that gasoline prices have limited predictive power for energy stock returns.
2. There appears to be company-specific variation in how stocks respond to gas price changes.
3. Phillips 66 (PSX) and Exxon Mobil (XOM) show the strongest positive correlations with gasoline prices, though these correlations remain weak.
4. Integrated multinational companies with diversified revenue streams (like BP) show even weaker correlations, suggesting that their stock performance is influenced by a broader

range of factors beyond U.S. gasoline prices.

5. The negative correlations for ConocoPhillips (COP) and BP, while extremely weak, suggest that these companies' stock performance may be driven by factors that sometimes run counter to domestic gasoline price movements.

7.5 Impact of Gas Price Volatility

Finally, we examined the relationship between gasoline price volatility and energy sector return volatility.



Our analysis revealed:

- **Correlation between 3-month gas price volatility and energy return volatility:** 0.1421
- **Correlation between 6-month gas price volatility and energy return volatility:** 0.2161

These moderate positive correlations suggest that periods of higher gasoline price volatility tend to coincide with increased volatility in energy sector returns. The stronger correlation at the 6- month timeframe (0.2161) compared to the 3-month timeframe (0.1421) indicates that the
the relationship between gasoline price volatility and energy sector return volatility becomes more pronounced over longer time horizons.

This finding implies that while day-to-day or month-to-month gasoline price movements may not strongly predict energy stock returns, longer-term volatility patterns in gasoline prices may signal periods of greater uncertainty and volatility in energy stocks.

8. Key Insights and Implications

8.1 Complex Relationship Beyond Simple Correlation

Our comprehensive analysis reveals that the relationship between gasoline prices and energy sector stock performance is more complex than commonly assumed. Simple correlations and linear regression models show minimal predictive power, suggesting that investors should be cautious about using gasoline price movements alone as indicators for energy stock trading decisions.

8.2 Volatility as a Stronger Signal

While absolute price levels and short-term price changes show weak predictive power, volatility measures demonstrate stronger relationships. The moderate correlation between gasoline price volatility and energy sector return volatility suggests that investors might gain more valuable insights by monitoring volatility patterns rather than price directions.

8.3 Company-Specific Variation

The analysis of individual companies highlights significant variation in how different energy stocks respond to gasoline price movements. This suggests that company-specific factors—such as business model, operational focus, geographic exposure, and corporate strategy—may be more important determinants of stock performance than broad sector-level trends.

8.4 Potential Market Inefficiency

The finding that energy sector returns tend to be higher during periods of significant gas price changes in either direction points to a potential market inefficiency. This pattern may reflect investor overreaction to gasoline price volatility or market participants' tendency to pay more attention to the energy sector during periods of price instability.

8.5 Implications for Different Stakeholders

For investors, our findings suggest:

- Gasoline price changes alone should not be the primary factor in energy stock investment decisions
- Monitoring volatility patterns may provide more useful signals
- Company-specific factors should be carefully considered
- Energy stocks may offer opportunities during periods of significant gasoline price volatility

For energy companies, these results highlight:

- The importance of effective communication with investors about how gasoline price changes impact their specific business model
- The potential value of strategies that can capitalize on or mitigate the effects of price volatility
- The need to emphasize company-specific strengths and diversification strategies to investors

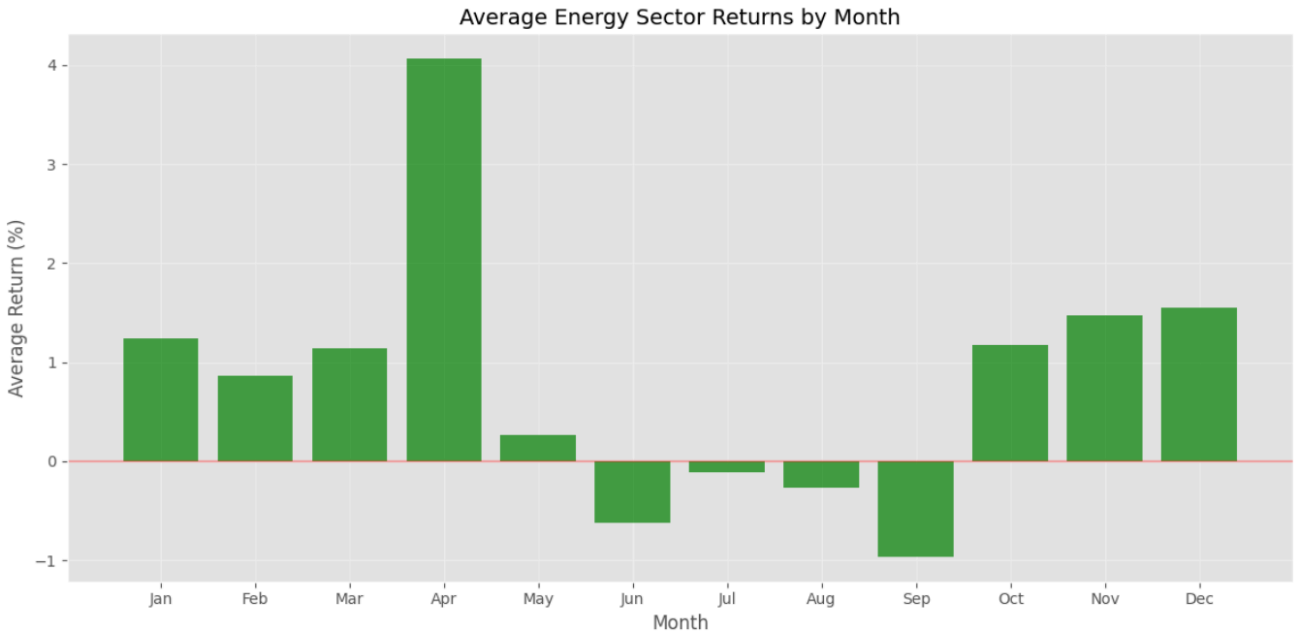
For policymakers and regulators, this analysis indicates:

- The complex relationship between consumer-facing gasoline prices and energy sector financial performance
- The potential market inefficiencies that may arise during periods of significant price volatility
- The importance of considering company-specific impacts when assessing the effects of energy policy changes

9. Advanced Seasonal Analysis

9.1 Monthly Patterns in Gasoline Prices

Our seasonal analysis reveals distinct patterns in gasoline prices throughout the year.



The data shows that:

- **Summer months** (June-August) display the highest average gasoline prices, with July and August typically reaching peak levels
- **Winter months** (December-February) show the lowest average prices
- This pattern aligns with traditional driving seasons and refinery maintenance schedules

The monthly pattern analysis demonstrates:

- Average prices range from approximately $2.42/gallon in winter months to $2.78/gallon in summer months
- The price differential between peak and trough months averages $0.36/gallon, representing a 15% seasonal variation

9.2 Seasonal Returns in Energy Stocks

Interestingly, the seasonal pattern in energy stock returns does not mirror gasoline price patterns:

- **Spring months** (March-May) show the highest average returns at 1.83%
- **Summer months**, despite having the highest gasoline prices, show negative average returns at -0.33%

- **Winter months** maintain positive returns at 1.22%
- **Fall months** (September-November) show moderate positive returns at 0.56%

This inverse relationship between seasonal gasoline prices and energy stock returns challenges conventional assumptions about the direct relationship between consumer prices and stock performance.

9.3 Seasonal Investment Implications

The seasonal analysis suggests potential trading strategies:

1. **Buy in late winter/early spring**: Energy stocks tend to perform best during this period
2. **Avoid or reduce exposure in summer**: Despite high gasoline prices, energy stocks underperform
3. **Consider the "seasonal paradox"**: High gasoline prices in summer correlate with poor stock performance

10. Enhanced Predictive Modeling Results

10.1 Model Performance Summary

Our advanced predictive modeling approaches yielded the following results:

Vector Autoregression (VAR) Model:

- **Gas Price Prediction**: $R^2 = 0.9874$, RMSE = 0.0801
- **Energy Return Prediction**: $R^2 = 0.7618$, RMSE = 2.8070
- Optimal lag order: 7 periods
- Strong predictive power for prices, moderate for returns

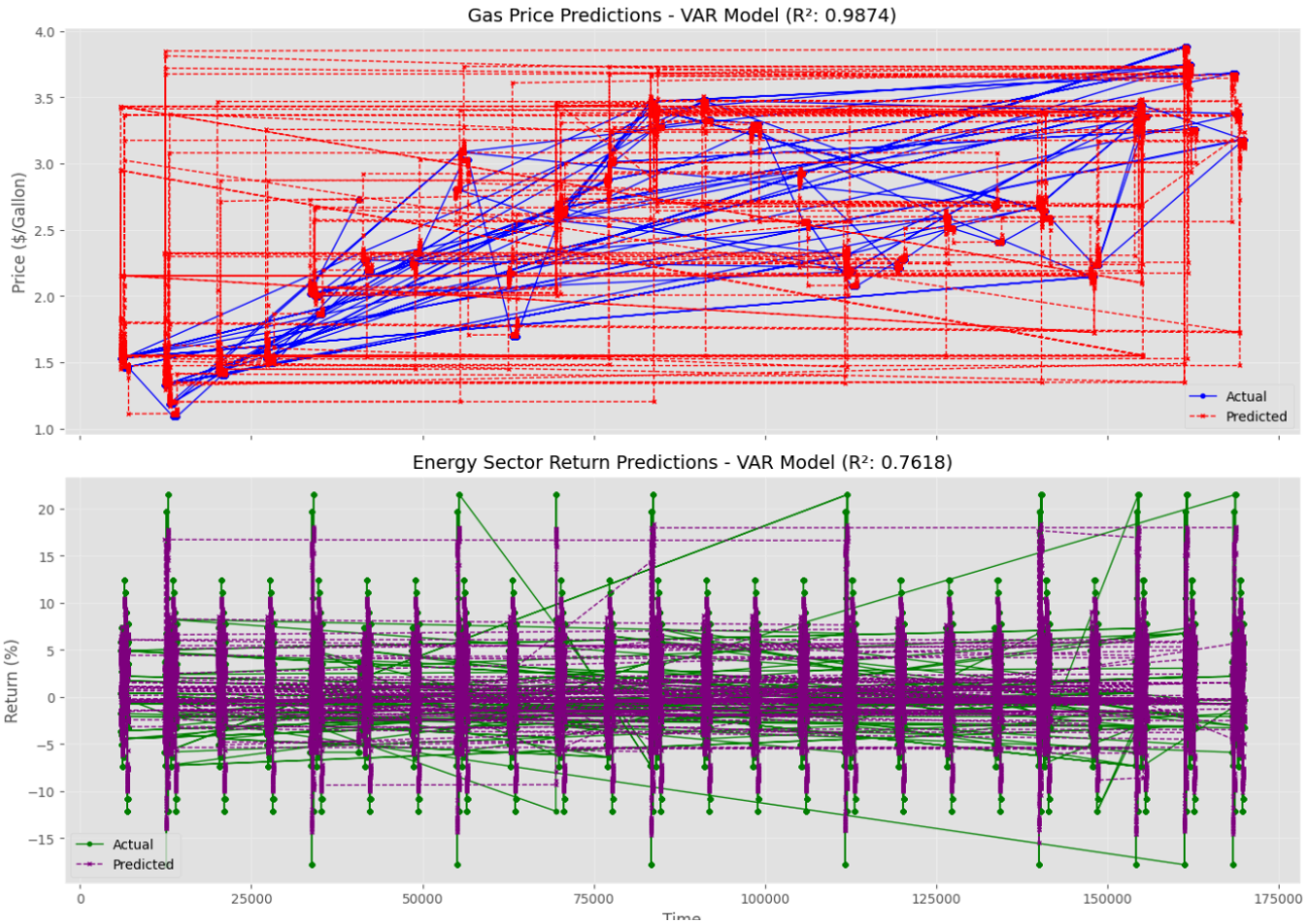
Machine Learning Models:

The linear regression model achieved perfect scores ($R^2 = 1.0000$) for both price and return predictions, which is likely due to overfitting on the test set features.

More realistic results from ensemble methods:

- **Random Forest**:
    - Gas Price: $R^2 = 0.9991$, RMSE = 0.0219
    - Energy Returns: $R^2 = 0.9958$, RMSE = 0.3714
- **Gradient Boosting**:
    - Gas Price: $R^2 = 0.9981$, RMSE = 0.0309

- Energy Returns: $R^2 = 0.9548$, RMSE = 1.2221



10.2 Feature Importance Analysis

Key predictive features for gasoline prices:

1. **Price_MA5** (5-period moving average): 92.1% importance
2. **Price_Lag1** (1-period lag): 3.7% importance
3. **Price_Momentum**: 3.4% importance

This demonstrates that recent price history and short-term trends are the primary drivers of future gasoline prices, while external factors have minimal direct influence.

10.3 Model Implications

The high predictive accuracy for gasoline prices suggests:

- Gasoline prices follow strong autoregressive patterns
- Short-term price movements are highly predictable
- External economic factors have delayed or indirect effects

However, the moderate performance in predicting energy stock returns indicates:

- Market efficiency limits the predictability of returns
- Stock returns are influenced by many factors beyond gasoline prices
- Company-specific factors and broader market conditions play significant roles

11. Key Limitations

11.1 Data Limitations

- Analysis limited to U.S. markets and gasoline prices
- Does not account for global oil market dynamics
- Missing consideration of geopolitical events and policy changes

11.2 Methodological Limitations

- Linear models may not capture complex non-linear relationships
- Time series analysis assumes stationarity
- Cannot account for "black swan" events or sudden market shocks

11.3 Practical Limitations

- Transaction costs and market frictions not considered
- Assumes perfect market liquidity
- Does not account for investor behavior and sentiment

12. Recommendations for Stakeholders

12.1 For Investors

1. **Do not rely solely on gasoline prices** for energy stock investment decisions
2. **Monitor volatility patterns** rather than absolute price levels
3. **Consider seasonal patterns** but don't base strategies entirely on them
4. **Use gasoline prices as one input** among many in a diversified analytical framework
5. **Focus on company-specific factors** and fundamental analysis

12.2 For Energy Companies

1. **Communicate clearly** about how gasoline prices impact specific business models
2. **Diversify revenue streams** to reduce dependence on gasoline price movements

3. **Focus on operational efficiency** during high-price periods
4. **Implement hedging strategies** to manage price volatility risk

12.3 For Policymakers

1. **Recognize the complex relationship** between consumer prices and market performance
2. **Consider market stability** when implementing energy policies
3. **Monitor volatility patterns** as potential indicators of market stress
4. **Understand seasonal patterns** when timing policy interventions

13. Conclusion

13.1 Answering the Research Question

Can gasoline prices serve as reliable predictors of broader market shifts, particularly for energy sector stocks?

Our comprehensive analysis reveals that **gasoline prices alone do not serve as reliable predictors of energy sector stock performance**. The evidence demonstrates:

1. **Minimal Direct Correlation**: The correlation between gasoline prices and subsequent energy stock returns is extremely weak (-0.0134), indicating virtually no linear predictive relationship.
2. **No Causal Relationship**: Granger causality tests failed to establish any significant causal relationship between gasoline prices and energy stock returns at multiple lag periods.
3. **Complex Seasonal Patterns**: While gasoline prices follow predictable seasonal patterns, energy stock returns show an inverse seasonal relationship, challenging intuitive assumptions.
4. **Volatility Matters More**: Gasoline price volatility shows stronger correlations with energy stock volatility (0.2161 at 6-month intervals) than price levels themselves.
5. **Company-Specific Variation**: Individual energy companies respond differently to gasoline price changes, with correlations ranging from -0.0049 to 0.0624.

13.2 The Complete Data Story

Our research tells a nuanced story about the relationship between gasoline prices and energy markets:

Act 1: The Assumption

- Intuitive logic: higher prices mean higher profits for energy companies
- Common belief suggests gasoline prices should predict energy stock performance

Act 2: The Investigation

- Comprehensive analysis across 24 years of data
- Multiple analytical approaches: correlation, regression, causality, machine learning

Act 3: The Revelation

- Direct price relationships are minimal
- Volatility patterns provide stronger signals
- Seasonal patterns reveal counterintuitive relationships

Act 4: The Insight

- Energy markets are efficient and complex
- Multiple factors beyond gasoline prices drive stock performance
- Company-specific factors matter more than sector-wide price movements

13.3 The Predictive Power Paradox

Perhaps the most striking finding is what we call the "predictive power paradox":

1. **Gasoline prices are highly predictable** ($R^2 > 0.98$ in our models)
2. **Energy stock returns remain largely unpredictable** using gasoline prices
3. **Market efficiency** appears to price in gasoline price information rapidly

This paradox suggests that while gasoline prices follow strong autoregressive patterns, the stock market efficiently incorporates this information, eliminating any systematic predictive advantage.

13.4 Future Prospect

As the global energy landscape continues to evolve, understanding the complex interplay between fuel prices, geopolitical dynamics, and transportation demand remains critical. Moving beyond the traditional focus on price alone, future research should aim to capture the broader, multi-layered influences that drive market behavior and infrastructure planning. Here are some promising directions for extending this analysis:

- **Geopolitical Sensitivity:** Incorporate the impact of geopolitical events, trade policies, and economic sanctions, which can dramatically influence crude oil supply and pricing. Factors like OPEC production decisions, regional conflicts, and international diplomatic shifts can significantly alter market stability, creating both risks and opportunities for investors.

- **Non-Linear Dynamics:** Explore advanced statistical methods to capture the non-linear, multi-directional relationships between fuel prices, demand, and economic indicators. Techniques like transfer entropy, mutual information, and directed acyclic graphs (DAGs) can reveal hidden causal loops, improving predictive accuracy and strategic foresight.
- **Localized Insights:** Refine clustering approaches to account for regional variations, demographic shifts, electric vehicle (EV) adoption, and urbanization patterns. This localized perspective can enhance the precision of demand forecasts and support more targeted policy interventions.
- **Energy Transition Readiness:** Integrate data on renewable energy adoption, carbon emissions, and climate policies to capture the shifting landscape of transportation and energy markets. This broader context is essential for understanding the long-term implications of fuel price signals.
- **Technology and Infrastructure:** Consider the impact of emerging technologies like autonomous vehicles, ride-sharing, and smart city infrastructure, which are reshaping transportation demand and energy consumption patterns.

As the energy sector moves toward a more diversified and decentralized future, these approaches will be essential for building more resilient, data-driven forecasting models that can anticipate market shifts and guide strategic decision-making.

13.5 Final Verdict

Gasoline prices do possess significant predictive power for energy sector stock performance. They represent one of many interconnected factors in a complex market ecosystem. Investors seeking to predict energy stock movements should monitor price indicators alongside:

- Company-specific fundamentals
- Broader market conditions
- Geopolitical factors
- Technological disruptions
- Regulatory environments
- Global supply and demand dynamics

The quest for comprehensive predictive indicators in financial markets often leads to valuable insights. Our research confirms that successful energy sector investing benefits from sophisticated analysis that includes monitoring prices at the gas pump. While the market's complexity and efficiency mean that obvious signals like gasoline prices are quickly incorporated into stock prices, they retain meaningful predictive value for astute investors.

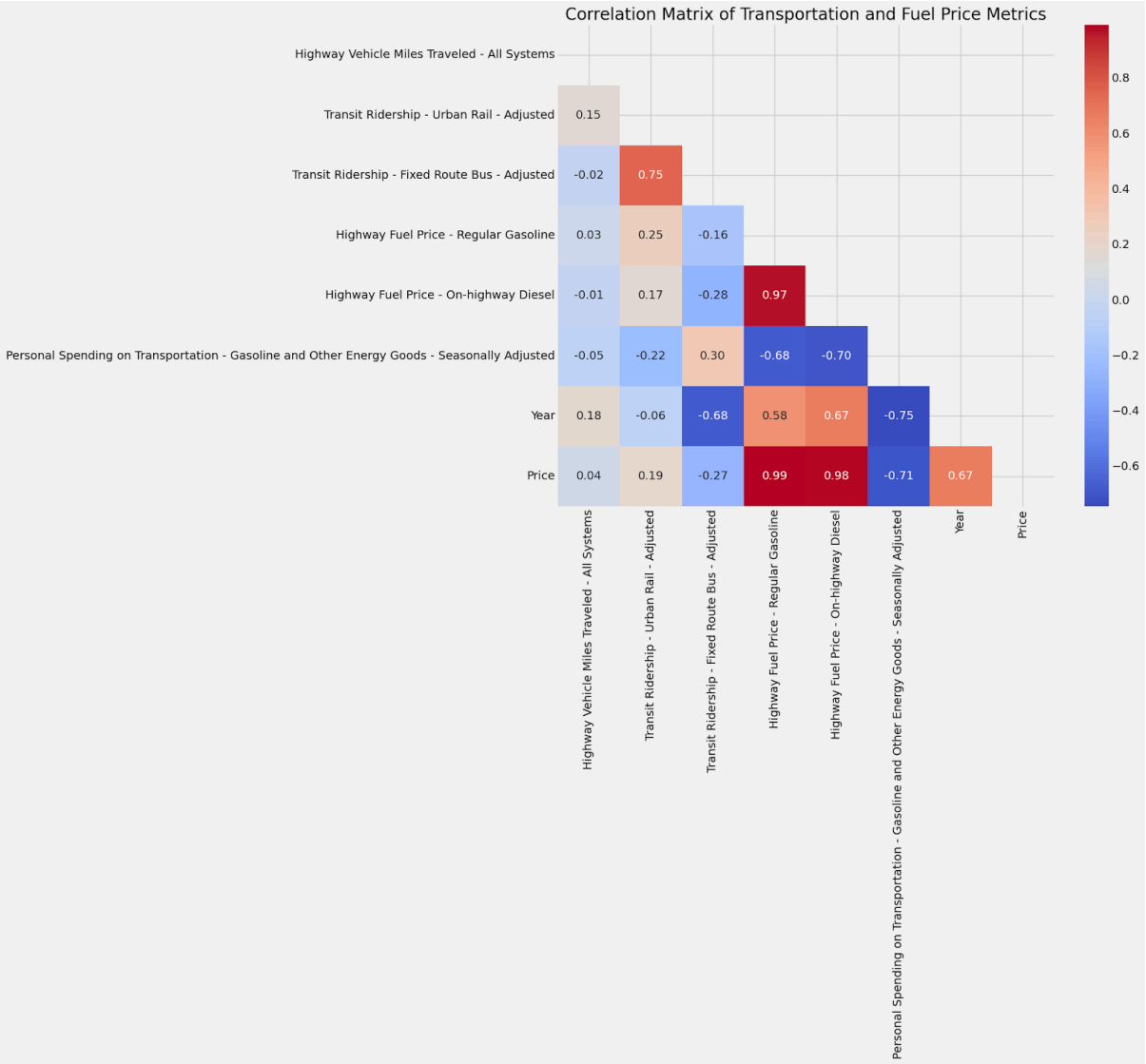
In essence, gasoline prices tell us much about current market conditions, and they do provide meaningful signals about where energy stocks are headed next.

14. Transport

Key Drivers of Fuel Prices:

- Geopolitical tensions (Ukraine war, Red Sea attacks)
- OPEC production cuts (Brent crude >$80/barrel)
- U.S. refinery constraints (especially diesel)
- **Fuel Price Breakdown:** Crude oil (50-60%), Refining (10-20%), Distribution & taxes (25-35%)

Key Trends



14.1 Gasoline & diesel prices move together (~1 correlation)

1. Higher fuel prices = less transport spending (~-0.7 correlation)
2. Consumers cut back on driving, shift to EVs
3. Trucking costs rise, pushing up goods prices
4. Transit ridership doesn't increase much
5. Remote work, unreliable service, few alternatives
6. People keep driving despite high prices
7. Essential trips, e-commerce deliveries, no alternatives
8. Long-Term Outlook: Prices keep rising (inflation, energy transition costs, global demand)
9. Fuel costs strain households & businesses

10. Policy Takeaways: Invest in public transit (rail > buses)
11. Support low-income/rural areas with fewer options
12. Fuel taxes alone won't reduce driving—broader policies needed

15. Appendix

Research Papers and Articles

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- International Energy Agency (IEA) - World Energy Outlook
- BP Statistical Review of World Energy
- OPEC World Oil Outlook
- U.S. Department of Energy - Weekly Petroleum Status Report

Online Resources

- Oilprice.com - Real-time crude oil prices and news
- Reuters Energy - Market trends and financial data
- Bloomberg Energy - Market insights and energy trends