# Predicting Trading Volume Distributions using Social Media Signals


## Abstract

Trading volume predictions in the stock market are as important as predicting price movements. There have been numerous attempts to build models predicting trading volume using market data. In this paper, we explore the use of social media signals to predict trading volume. We use two techniques to evaluate the signals. First, we use linear regression testing in a base model, social media model and a social media enhanced model. Next, we look at the correlation analysis to our covariates. The universe of stocks used in our study is the S&P-500 stocks. Our findings indicate that social media signals have significant influence over next day intraday trading volume. We also find these findings are consistent in different scenarios and factor combinations.



**Keywords**: Social Media Sentiment, Market Sentiment, Trading Volume, Predictive Modelling

## 1. Introduction

Trading volume predictors are part of a continuous iterative research process at most firms. Trading volume depends on multiple factors such as the market activity, political events, global unrest and human behavior. VWAP estimates and trades depend on using accurate expectations of trading volume. Algorithmic execution uses volume predictions to optimize trade sizes to realize the best price without creating adverse market impact.

In our literature review, we came across some interesting research on trading volume predictors. There are ARMA models that use all available trade volume data as presented by (Satish, Saxena, & Palmer, 2014). There is also a good case to use price action in addition to intraday volume as a covariate in the model as presented by (Ribom & Sjoberg, 2015). All the literature, however, only uses market data in their models. There is no metric used to factor in the behavioral impact on volume. There is enough evidence to support that investors are not rational and are driven by emotion. We use social media signals as a proxy for human behavior and market sentiment. Our aim is not to provide a volume predictor model that can be used as is in a live environment. Our goal is to present evidence to validate the use the of social media signals in models to improve the existing predictors.

## 2. Factor Description

Our social media metrics are taken from Social Market Analytics. Social Market Analytics (SMA) uses its patented algorithmic system to create actionable intelligence from social media traffic. The process separates the signal from the noise and provides users with a predictive signal that leads market movements. SMA provides a family of quantitative metrics that can be used as additional indicators in trading strategy to create excess returns. Analysis in this paper is based upon a metric derived from SMA's **S-Volume** factor. We focus on three core metrics in our analysis. Additional information on other metrics is available in SMA whitepapers.

The **S-Volume** on any given security is defined as the volume of unique tweets received from approved accounts during an observation window. An account becomes approved by SMA's algorithm, which considers factors such as but not limited to, tweet frequency, tweet volume, forward looking nature etc. Figure 1 below illustrates this through an observation window of 24 hours.

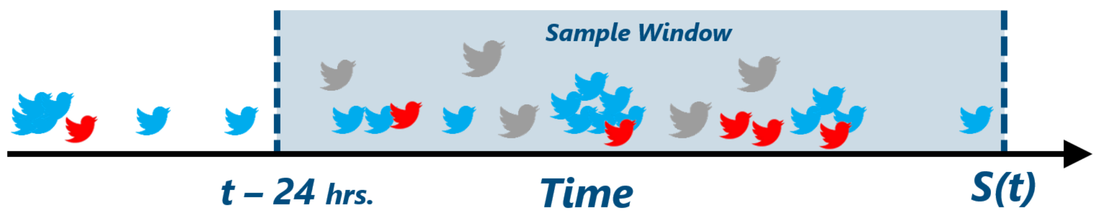


*Figure 1: SMA's Process to Extract Signal from Noise*

The Twitter birds in Figure 1 represent all the tweets that came in during our sampling window. For our research, we used sampling window of different lengths, ranging from 1 minute to 24 hours.

The **blue** birds represent the population of tweets that come in from a source approved by SMA.

The **red** birds represent the population of tweets that are ignored because they are either duplicates of other tweets or are coming from sources that are not approved.

The **grey** birds represent the population of tweets from accounts that have been identified but not rated due to lack of activity or age of the account.

**S-Volume** is the number of "**blue**" birds that came in during our sample window. This number is interchangeably also referred to as indicative tweet volume. This value is always an integer greater than or equal to 0.

**Raw-Volume** is the number of tweets that came in during our sample window. This is also interchangeably referred to as total tweet volume. This value is always an integer greater than or equal to 0. Raw-Volume will generally be greater than S-Volume.

Another core metric used in our research is **SV-Score**. SV-Score is the normalized value of indicative tweet volume. The value is normalized by computing the Z-Score of S-Volume with respect to a 20 day mean and 20-day standard deviation as in the equation below.

$$SV\_Score_t = \frac{S\_Volume_t - MA_{20}(S\_Volume_t)}{SD_{20}(S\_Volume_t)}$$

$where,$

$S_{Volume_t}\ is\ the\ volume\ of\ tweets\ at\ time$ t

$MA_{20}\left(S_{Volume_t}\right)\ is\ the\ 20\ moving\ average\ of\ S_{Volume} at\ time$ t

$SD_{20}\left(S_{Volume_t}\right)\ is\ the\ 20\ standard\ deviation\ of\ S_{Volume} at\ time$ t

*Equation 1: Calculation of SV-Score*

The third metric that we use is called **S-Poster**. This metric refers the number of unique contributors of indicative tweets in the sample window.

## 3. Universe and Test Interval

We test our predictor on a time series of the S&P 500 names. If a stock was removed from the index, we do not try to make a prediction for it on the following day.

The time interval we used for our study was a 6-month period 2017-02-17 to 2017-10-17.

The interval was chosen due to ease of data handling of raw-tweets (about 6 million during our observation window) and the intraday 1-minute price date for securities.

In our future study, we will extend this to the full out of sample data range from SMA that starts in 2011-12-01.

## 4. Volume Regression Models

Based on our research, we find that a linear regression models is a good way to evaluate the goodness of a fit in our predictor model.

We perform a linear regression, where our response (dependent) variable is the **Total Volume** in the subsequent trading session today and the covariates are the social media related metrics as below.

| Response Variable | Covariates |
|---|---|
| Trading Volume Today | **Raw Volume** from 16:00 yesterday to 9:25 today |
| | **SV-Score** at 09:25 today (24-hour sample window) |
| | **Poster** count at 09:25 (24-hour sample window) |
| | Trading Volume Yesterday (Optional) |

The definition of the covariates and the calculation based on sample window is discussed in the section "Factor Description" above. Trading Volume is defined as the total trading volume between [09:30, 16:00] US Eastern time. We ignore pre-market hours and after-hours trading volume for this study. To avoid any look ahead biases, **we sample all our covariates before the market open**.

As a **base model**, we chose a model which has no social media variable input. It is only dependent on the previous day value of response variable.

$$y_t = \beta_0 + \beta_1 y_{t-1} + \varepsilon$$

***Equation 2: Base Regression Model***

We find significant autocorrelation for most of the stocks in our universe. This makes intuitive sense as the events of the previous day have influence on the trading volume on the next day. The plot in Figure 2 below shows the behavior for AT&T during our test interval.

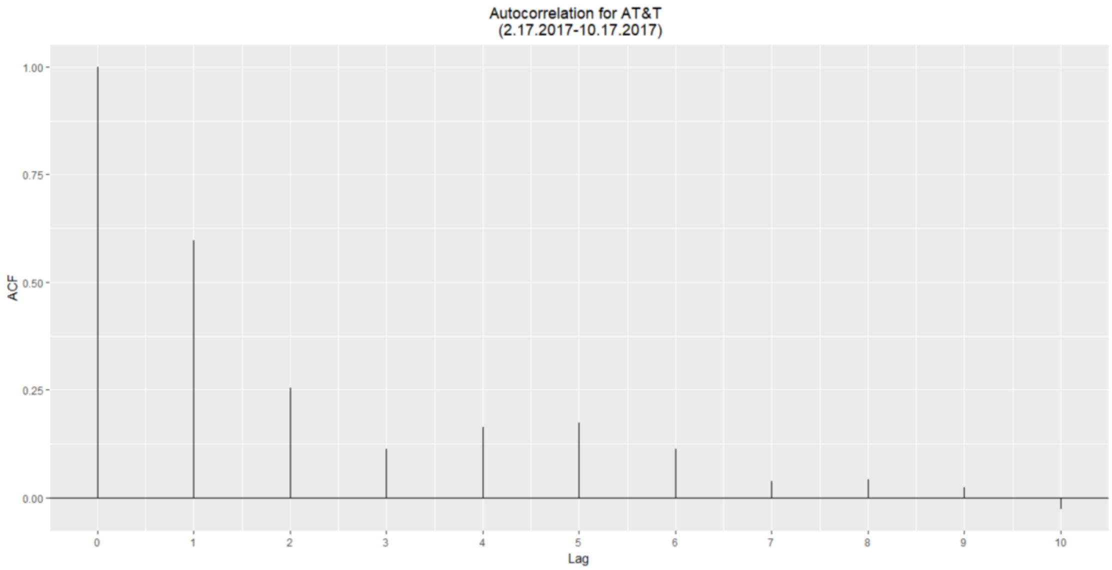


*Figure 2: ACF test for Autocorrelation in Trading volume for AT&T*

Using the Base Model, the regression results show decent adjusted R-squared values. A sample of values for 20 stocks is shown in the table below. A detailed table of results can be found in the Appendix.

| Ticker Symbol | Regression Adj $R^2$ |
|---|---|
| NVDA | 26.7% |
| NFLX | 23.6% |
| MU | 15.0% |
| GILD | 33.6% |
| HD | 8.1% |
| KR | 40.9% |
| WMT | 11.5% |
| BA | 27.4% |
| AAL | 17.4% |
| TGT | 10.6% |
| DIS | 10.6% |
| INTC | 14.1% |
| AMGN | 16.5% |
| CSCO | 25.4% |

| | |
|---|---|
| NKE | 15.5% |
| SBUX | 28.7% |
| GE | 10.2% |
| BMY | 29.4% |
| IBM | 11.1% |
| AAPL | 13.4% |

*Table 1: Regression Results of base model for 20 stocks*

Next, we move on to create an **enhanced model** with our sentiment covariates included in the model. For this exercise, to test the validity of our factor, **we remove the previous day trading volume**. The regression model is defined in Equation 3.

$$y_t = \beta_0 + \beta_1 Raw\_Volume_{16:00-09:25} + \beta_2 SV\_Score_{09:25} + \beta_3 Poster\_Count_{09:25} + \varepsilon$$

*Equation 3: Regression Model for Enhanced Model*

Table 2 below shows the $R^2$ values of stocks in Table 1 for the enhanced model in comparison to the base model.

| Ticker Symbol | Base Model $R^2$ | Enhanced Model $R^2$ | Improvement |
|---|---|---|---|
| NVDA | 26.7% | 39.5% | 48.0% |
| NFLX | 23.6% | 69.7% | 195.2% |
| MU | 15.0% | 56.1% | 274.8% |
| GILD | 33.6% | 49.1% | 46.2% |
| HD | 8.1% | 36.7% | 354.3% |
| KR | 40.9% | 80.4% | 96.6% |
| WMT | 11.5% | 32.8% | 186.1% |
| BA | 27.4% | 56.4% | 105.9% |
| AAL | 17.4% | 21.7% | 25.0% |
| TGT | 10.6% | 55.1% | 420.7% |
| DIS | 10.6% | 61.8% | 484.5% |
| INTC | 14.1% | 33.3% | 136.2% |
| AMGN | 16.5% | 52.7% | 219.1% |
| CSCO | 25.4% | 68.4% | 169.7% |
| NKE | 15.5% | 55.2% | 255.7% |
| SBUX | 28.7% | 71.4% | 149.0% |
| GE | 10.2% | 44.4% | 335.0% |
| BMY | 29.4% | 34.0% | 15.8% |
| IBM | 11.1% | 69.5% | 523.4% |
| AAPL | 13.4% | 23.0% | 70.9% |

*Table 2: Regression Results for Enhanced Model*

The results show strong evidence that even in the absence of information about the previous day's volume, the social media signals provide a better model to predict the total trading volume through the day. The 20-stock sample is a good representative of our universe. The detailed results are in the Appendix below.

A histogram of the regression fit for the base model and the improved model is presented in the figure below. The histogram shows a comparison of the Adj. $R^2$ values for both the base and the enhanced model. The visual shows that in the base model, most of the stocks are clustered around 0 to 0.2 values. However, in the enhanced model, this cluster diffuses into other higher values. This implies that the enhanced model shows a better fit than the base model.

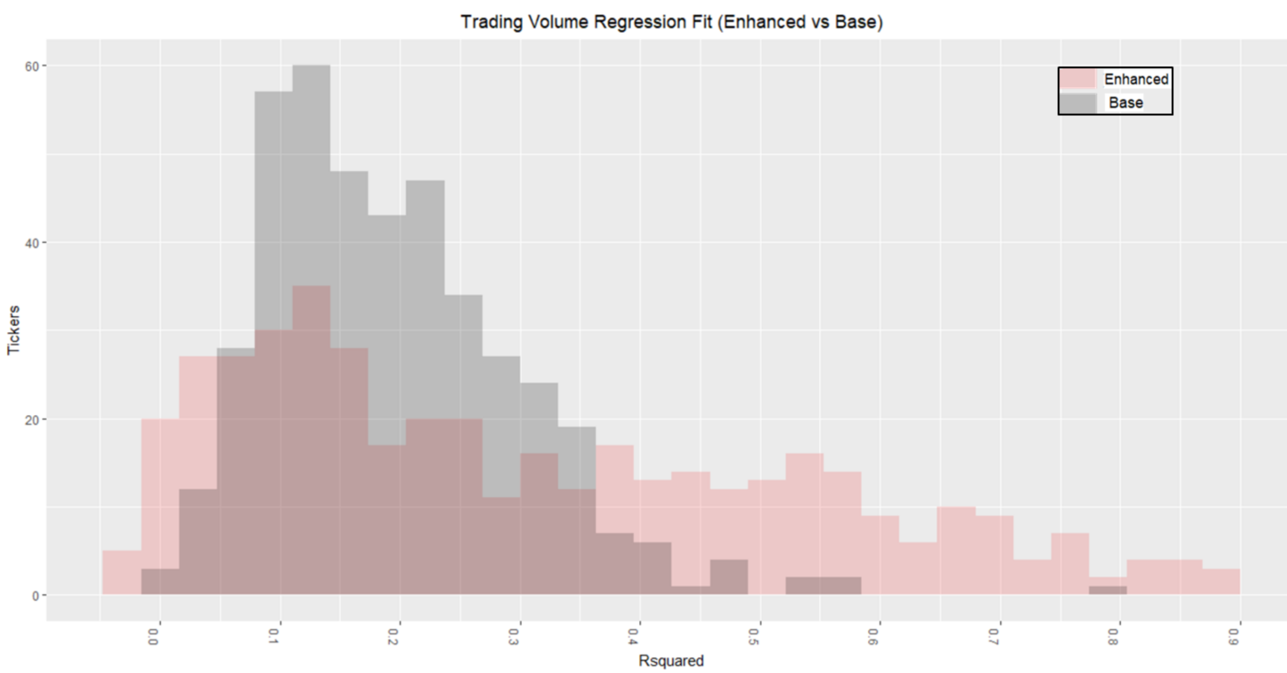


*Figure 3: Regression Fit Comparison for Base and Enhanced Model*

We also ran another version of the enhanced model where we use the previous day's trading volume as another covariate. The results show improvements from both, the base model and the social media only model. Figure 3 below shows the improvement from the base model when adding the previous day's trading volume covariate to the social media model.

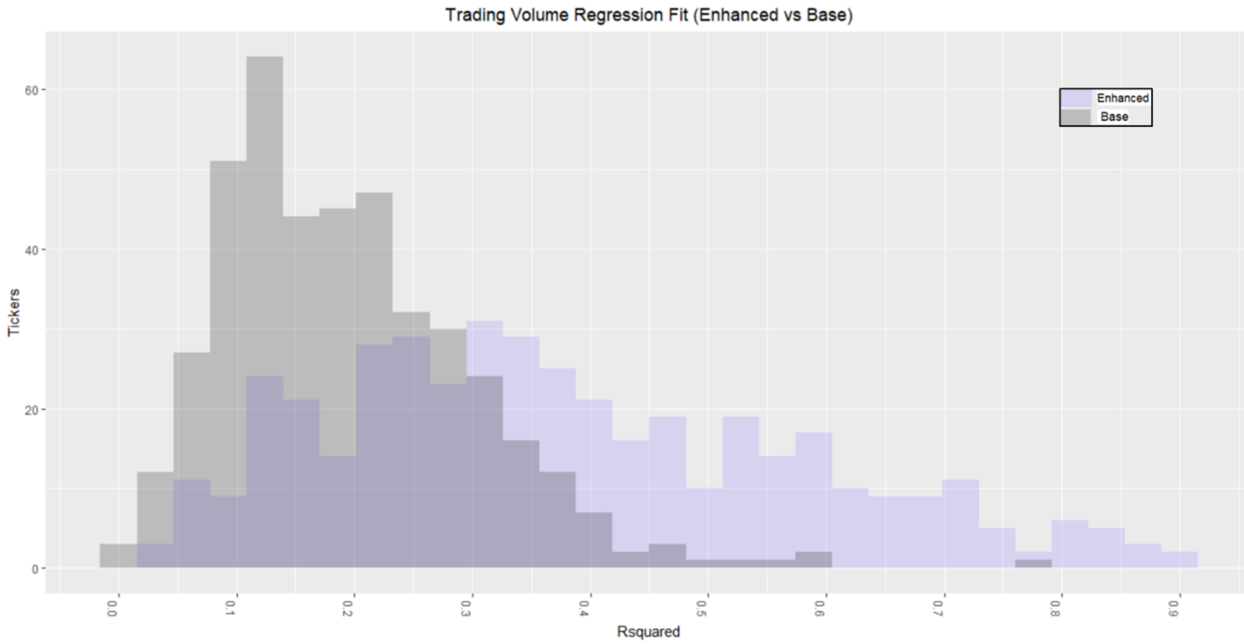


*Figure 4: Regression Fit Comparison for Base and Enhanced Model*

We see that the diffusion is even higher in this case, and the improvements from the base model are very significant. These results provide evidence that our model with all covariates included has the best fit in predicting intraday volume. The results for 20 stocks sample is tabulated below. We see the improvement is better than a social media only model. Improvement is percentage change in R-Squared between the Base Model and the Enhanced Model.

| Ticker Symbol | Base Model $R^2$ | Social Media Model $R^2$ | Enhanced Model $R^2$ | Improvement |
|---|---|---|---|---|
| NVDA | 26.7% | 47.4% | 47.4% | 77.8% |
| NFLX | 23.6% | 69.7% | 71.1% | 200.9% |
| MU | 15.0% | 56.1% | 57.2% | 282.0% |
| GILD | 33.6% | 49.1% | 57.7% | 71.8% |
| HD | 8.1% | 36.7% | 38.1% | 371.5% |
| KR | 40.9% | 80.4% | 81.2% | 98.3% |
| WMT | 11.5% | 32.8% | 34.8% | 203.3% |
| BA | 27.4% | 56.4% | 56.0% | 104.6% |
| AAL | 17.4% | 21.7% | 27.6% | 58.8% |
| TGT | 10.6% | 55.1% | 55.4% | 423.5% |
| DIS | 10.6% | 61.8% | 62.6% | 492.3% |
| INTC | 14.1% | 33.3% | 35.2% | 149.6% |

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|---|---|---|---|---|
| AMGN | 16.5% | 52.7% | 52.9% | 220.4% |
| CSCO | 25.4% | 68.4% | 69.4% | 173.5% |
| NKE | 15.5% | 55.2% | 57.1% | 267.9% |
| SBUX | 28.7% | 71.4% | 76.4% | 166.3% |
| GE | 10.2% | 44.4% | 44.0% | 330.7% |
| BMY | 29.4% | 34.0% | 41.8% | 42.2% |
| IBM | 11.1% | 69.5% | 70.8% | 534.8% |
| AAPL | 13.4% | 23.0% | 25.6% | 90.2% |

***Table 3: Comparison of $R^2$ values for Base, Social Media and Enhanced Model***

## Correlations of Factors

We next analyze the correlation of social media covariates to our response variable (total trading volume of the day). For the 20 stocks that we presented in the tables above, the Spearman correlation coefficients are encouraging.

| Ticker Symbol | Raw Volume | SV-Score | Poster Count |
|---|---|---|---|
| NVDA | 0.59 | 0.36 | 0.53 |
| NFLX | 0.53 | 0.29 | 0.47 |
| MU | 0.49 | 0.28 | 0.42 |
| GILD | 0.49 | 0.38 | 0.51 |
| HD | 0.48 | 0.21 | 0.25 |
| KR | 0.47 | 0.29 | 0.57 |
| WMT | 0.44 | 0.34 | 0.46 |
| BA | 0.43 | 0.15 | 0.39 |
| AAL | 0.42 | 0.31 | 0.40 |
| TGT | 0.41 | 0.41 | 0.47 |
| DIS | 0.41 | 0.25 | 0.33 |
| INTC | 0.40 | 0.30 | 0.40 |
| AMGN | 0.38 | 0.28 | 0.54 |
| CSCO | 0.36 | 0.33 | 0.41 |
| NKE | 0.35 | 0.39 | 0.44 |
| SBUX | 0.32 | 0.33 | 0.40 |
| GE | 0.29 | 0.26 | 0.43 |
| BMY | 0.29 | 0.29 | 0.42 |
| IBM | 0.28 | 0.24 | 0.34 |
| AAPL | 0.28 | 0.17 | 0.46 |

***Table 4: Correlations of the covariates to the response variable***

The correlations show a significant relationship between social media signals and the next session trading volume for a security. We also plot a histogram of the correlation of total trading volume with raw volume and poster count across all securities in the universe.

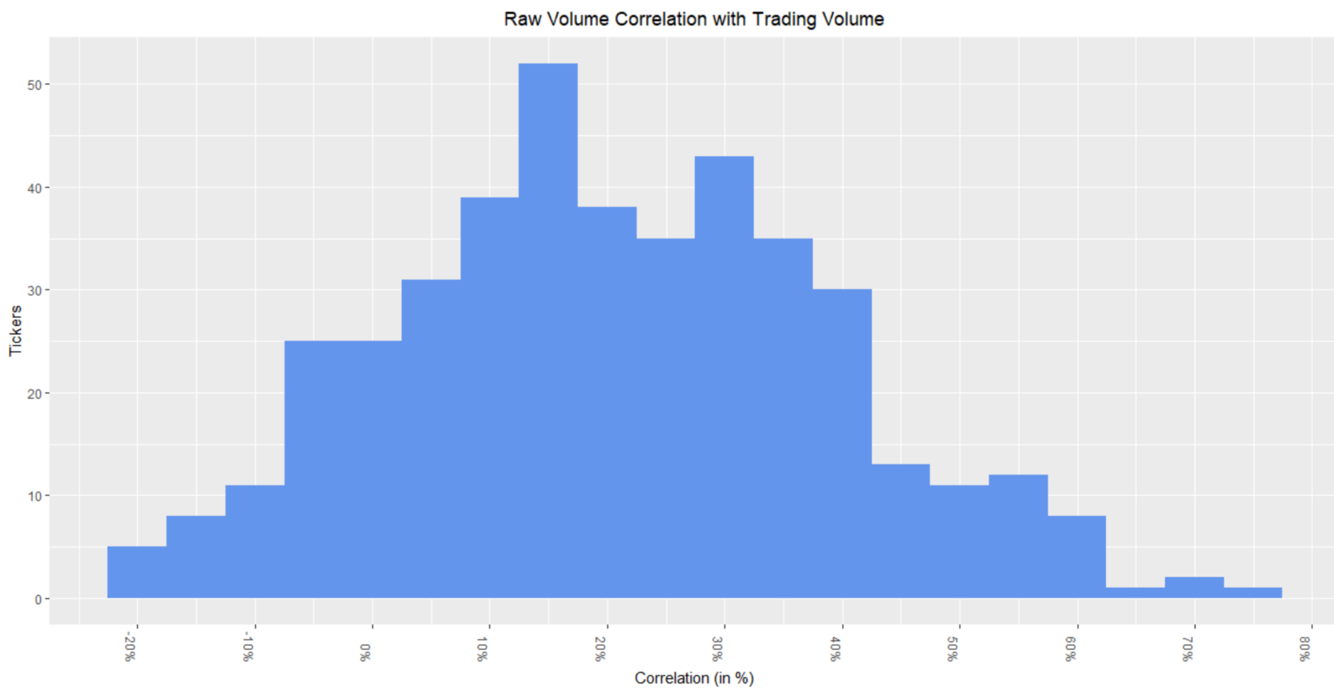


*Figure 5: Histogram of Raw Volume correlation with Trading Volume*

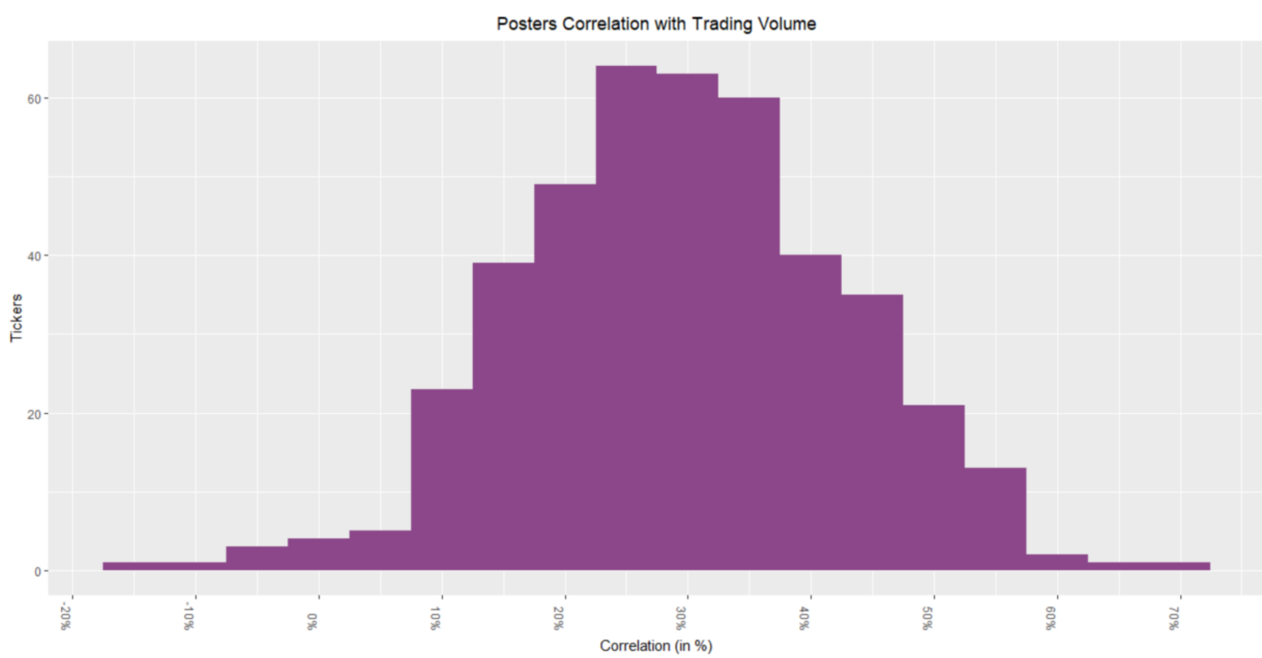


*Figure 6: Histogram of Poster Count Correlation with Trading Volume*

The histograms show a right skew in both the charts. The mean of the values for enhanced model is right of the median which shows encouraging results. This correlation is slightly stronger in the Poster count than in the raw-volume. Our hypothesis is that Poster count is a better covariate since Poster count is derived from the number of approved Twitter sources and Raw-Volume is the absolute volume of unique content. Both cases provide evidence to support the fact that pre-market message count (Raw-Volume) and professional investors engagement (Poster count) are strong predictors of trading volume.

## 5. Conclusion and Future Work

The results of this paper demonstrate the utility of social media factors in a canonical volume predictor model. The regression model provides evidence for a strong relationship between social media signals and the next day's trading volume. Our focus was not to create a model but to evaluate the quality of these signals in an environment. Social Market Analytics based volume predictor the signals have passed our evaluation tests.

In our work, we also came across encouraging results in predicting the mean trading volume and intraday trading volume volatility. These predictions are also helpful in predicting the volume distribution of securities. For future work, we plan to test the model over multiple horizons. We also want to study the impact that the sector of a security has on the results. In addition to regression analysis, we want to explore classification models that incorporate market and social media data to predict trading volume changes. Also, the next extension will include using the predicted value at start of the day and modifying it intraday as more information comes in.

## 6. References

Ribom, H., & Sjoberg, M. (2015). Intraday Analysis and Prediction of Volume Distribution on the Stockholm Stock Exchange.

Satish, V., Saxena, A., & Palmer, M. (2014). Predicting Intraday Trading Volume and Volume Percentages. *Journal of Trade*.

## 7. Appendix

The table below shows the Adj. $R^2$ values of our Base Model, Social Media Model and the Enhanced Model in columns 2-4. It also has the correlation of our covariates to next session trading volume in columns 5-7.

| Ticker Symbol | Base Model | Social Media Model | Enhanced Model | Raw - Volume | SV-Score | Poster Count |
|---|---|---|---|---|---|---|
| NVDA | 26.7% | 39.5% | 47.4% | 0.59 | 0.36 | 0.53 |
| NFLX | 23.6% | 69.7% | 71.1% | 0.53 | 0.29 | 0.47 |
| MU | 15.0% | 56.1% | 57.2% | 0.49 | 0.28 | 0.42 |
| GILD | 33.6% | 49.1% | 57.7% | 0.49 | 0.38 | 0.51 |
| HD | 8.1% | 36.7% | 38.1% | 0.48 | 0.21 | 0.25 |
| KR | 40.9% | 80.4% | 81.2% | 0.47 | 0.29 | 0.57 |
| WMT | 11.5% | 32.8% | 34.8% | 0.44 | 0.34 | 0.46 |
| BA | 27.4% | 56.4% | 56.0% | 0.43 | 0.15 | 0.39 |
| AAL | 17.4% | 21.7% | 27.6% | 0.42 | 0.31 | 0.40 |
| TGT | 10.6% | 55.1% | 55.4% | 0.41 | 0.41 | 0.47 |
| DIS | 10.6% | 61.8% | 62.6% | 0.41 | 0.25 | 0.33 |
| INTC | 14.1% | 33.3% | 35.2% | 0.40 | 0.30 | 0.40 |
| AMGN | 16.5% | 52.7% | 52.9% | 0.38 | 0.28 | 0.54 |
| CSCO | 25.4% | 68.4% | 69.4% | 0.36 | 0.33 | 0.41 |
| NKE | 15.5% | 55.2% | 57.1% | 0.35 | 0.39 | 0.44 |
| SBUX | 28.7% | 71.4% | 76.4% | 0.32 | 0.33 | 0.40 |
| GE | 10.2% | 44.4% | 44.0% | 0.29 | 0.26 | 0.43 |
| BMY | 29.4% | 34.0% | 41.8% | 0.29 | 0.29 | 0.42 |
| IBM | 11.1% | 69.5% | 70.8% | 0.28 | 0.24 | 0.34 |
| AAPL | 13.4% | 23.0% | 25.6% | 0.28 | 0.17 | 0.46 |
| MCD | 27.8% | 39.0% | 43.7% | 0.26 | 0.24 | 0.34 |
| CELG | 25.7% | 25.6% | 35.2% | 0.25 | 0.22 | 0.33 |
| ATVI | 16.6% | 8.9% | 17.7% | 0.23 | 0.28 | 0.33 |
| AMZN | 27.2% | 14.6% | 29.3% | 0.22 | 0.12 | 0.30 |
| XOM | 9.8% | 10.0% | 16.2% | 0.22 | 0.32 | 0.42 |
| F | 9.4% | 7.6% | 10.3% | 0.20 | 0.23 | 0.30 |
| FB | 12.6% | 43.9% | 43.6% | 0.19 | 0.29 | 0.41 |
| MSFT | 23.8% | 23.2% | 33.5% | 0.19 | 0.19 | 0.45 |
| C | 13.2% | 30.3% | 31.8% | 0.17 | 0.31 | 0.44 |
| WFC | 16.6% | 19.4% | 30.3% | 0.17 | 0.20 | 0.27 |
| T | 40.2% | 50.3% | 59.1% | 0.17 | 0.24 | 0.35 |
| ABBV | 20.7% | 15.6% | 25.3% | 0.15 | 0.24 | 0.35 |

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|---|---|---|---|---|---|---|
| CVX | 26.4% | 7.2% | 27.9% | 0.14 | 0.23 | 0.27 |
| BAC | 15.9% | 23.0% | 23.2% | 0.13 | 0.38 | 0.54 |
| JPM | 15.5% | 37.9% | 39.5% | 0.12 | 0.43 | 0.52 |
| GOOG | 27.4% | 20.8% | 35.8% | 0.11 | 0.28 | 0.25 |
| VZ | 26.3% | 39.2% | 44.6% | 0.09 | 0.15 | 0.32 |
| GS | 15.5% | 33.1% | 32.6% | 0.08 | 0.43 | 0.55 |
| CAT | 12.2% | 14.8% | 16.2% | 0.08 | 0.24 | 0.35 |
| PFE | 26.9% | 15.1% | 29.5% | 0.07 | 0.19 | 0.35 |
| KO | 26.8% | 13.8% | 28.8% | 0.03 | 0.23 | 0.40 |
| JNJ | 23.2% | 24.5% | 33.1% | -0.01 | 0.37 | 0.45 |
| V | 13.0% | 16.9% | 25.7% | -0.02 | 0.15 | 0.20 |
| MRK | 17.4% | 7.5% | 21.2% | -0.03 | 0.17 | 0.21 |
| MMM | 14.2% | 42.4% | 42.2% | -0.04 | 0.18 | 0.32 |
| GM | 10.1% | -1.4% | 9.5% | -0.10 | 0.18 | 0.29 |
| COST | 26.9% | 28.8% | 36.5% | 0.77 | 0.35 | 0.69 |
| CMG | 25.9% | 28.9% | 28.6% | 0.68 | 0.24 | 0.41 |
| AMAT | 30.8% | 31.7% | 45.2% | 0.48 | 0.33 | 0.34 |
| PYPL | 23.7% | 43.1% | 46.4% | 0.36 | 0.09 | 0.35 |
| LMT | 21.7% | 28.7% | 35.0% | 0.36 | 0.25 | 0.31 |
| CRM | 21.9% | 40.2% | 42.1% | 0.24 | 0.23 | 0.51 |
| CMCSA | 13.6% | 29.4% | 31.4% | 0.19 | 0.21 | 0.31 |
| PCLN | 18.1% | 65.9% | 65.8% | 0.18 | 0.22 | 0.28 |
| CVS | 3.6% | 11.5% | 12.2% | 0.15 | 0.32 | 0.32 |
| MS | 15.5% | 19.2% | 23.1% | -0.01 | 0.30 | 0.42 |
| PG | 4.9% | 2.1% | 6.1% | -0.06 | 0.08 | 0.24 |
| M | 9.2% | 31.2% | 33.4% | 0.40 | 0.26 | 0.40 |
| BBY | 19.0% | 82.4% | 82.2% | 0.28 | 0.22 | 0.37 |
| DAL | 21.8% | 26.3% | 31.5% | 0.27 | 0.38 | 0.40 |
| QCOM | 14.6% | 54.9% | 54.6% | 0.24 | 0.16 | 0.41 |
| PEP | 18.5% | 11.0% | 20.0% | 0.02 | 0.25 | 0.34 |
| UNH | 37.1% | 11.4% | 40.7% | 0.02 | 0.20 | 0.25 |
| LOW | 11.3% | 60.9% | 61.2% | 0.44 | 0.34 | 0.43 |
| AVGO | 22.1% | 56.6% | 56.9% | 0.41 | 0.23 | 0.43 |
| WDC | 4.6% | 12.4% | 14.0% | 0.28 | 0.18 | 0.23 |
| MO | 23.7% | 27.9% | 31.3% | 0.27 | 0.19 | 0.28 |
| AGN | 29.5% | 17.1% | 33.9% | 0.19 | 0.03 | 0.21 |
| CHK | 12.3% | 30.2% | 29.6% | 0.17 | 0.28 | 0.36 |
| LUV | 19.4% | 8.1% | 23.1% | 0.17 | 0.09 | 0.09 |
| TWX | 10.1% | 5.9% | 11.1% | 0.13 | 0.16 | 0.24 |
| BIIB | 12.2% | 23.5% | 25.8% | 0.08 | 0.24 | 0.32 |
| AXP | 17.2% | 48.9% | 51.3% | 0.02 | 0.27 | 0.33 |

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|---|---|---|---|---|---|---|
| MA | 16.4% | 11.8% | 22.5% | -0.09 | 0.14 | 0.18 |
| FCX | 8.5% | 41.6% | 41.4% | 0.53 | 0.29 | 0.42 |
| UA | 8.8% | 58.3% | 58.3% | 0.40 | 0.36 | 0.35 |
| CSX | 23.1% | 65.8% | 68.6% | 0.29 | -0.01 | 0.27 |
| ADBE | 27.3% | 54.4% | 56.5% | 0.15 | 0.18 | 0.43 |
| DOW | 2.2% | 5.6% | 5.1% | 0.10 | 0.24 | 0.28 |
| WYNN | 11.1% | 48.0% | 47.8% | 0.44 | 0.32 | 0.41 |
| WBA | 14.9% | 42.8% | 46.0% | 0.41 | 0.17 | 0.40 |
| EBAY | 15.3% | 50.5% | 51.8% | 0.33 | 0.24 | 0.29 |
| ORCL | 30.3% | 80.0% | 80.6% | 0.31 | 0.26 | 0.49 |
| LLY | 13.2% | 51.6% | 53.0% | 0.23 | 0.27 | 0.34 |
| REGN | 21.0% | 34.7% | 35.4% | 0.19 | 0.31 | 0.45 |
| RTN | 16.7% | 13.5% | 23.5% | 0.14 | 0.22 | 0.18 |
| CL | 21.8% | 25.5% | 28.0% | 0.12 | 0.19 | 0.33 |
| UAL | 17.7% | 43.4% | 46.3% | 0.30 | 0.30 | 0.38 |
| FDX | 35.4% | 42.9% | 58.3% | 0.20 | 0.08 | 0.38 |
| VRTX | 4.8% | 81.4% | 81.7% | 0.49 | 0.33 | 0.45 |
| SWKS | 22.0% | 36.7% | 39.2% | 0.40 | 0.24 | 0.48 |
| COP | 5.3% | 50.6% | 50.2% | 0.17 | 0.17 | 0.24 |
| MDT | 30.3% | 19.2% | 36.1% | 0.17 | 0.25 | 0.37 |
| EOG | 18.4% | 19.2% | 26.8% | 0.17 | 0.25 | 0.27 |
| UTX | 7.5% | 18.4% | 19.2% | 0.15 | 0.21 | 0.33 |
| GLW | 20.5% | 32.1% | 37.0% | 0.11 | 0.20 | 0.33 |
| UPS | 17.5% | 22.5% | 31.2% | 0.09 | 0.18 | 0.20 |
| DD | 5.5% | 1.6% | 4.1% | -0.20 | 0.03 | 0.10 |
| ULTA | 20.4% | 76.0% | 76.7% | 0.59 | 0.34 | 0.55 |
| HAL | 18.3% | 15.9% | 25.5% | 0.16 | 0.19 | 0.31 |
| PM | 8.1% | 11.3% | 16.0% | -0.09 | -0.03 | 0.12 |
| WFM | 1.7% | 87.5% | 88.9% | 0.53 | 0.21 | 0.53 |
| FOXA | 46.6% | 32.1% | 51.6% | 0.33 | 0.05 | 0.24 |
| ABT | 22.9% | 19.6% | 31.7% | 0.15 | 0.25 | 0.27 |
| BLK | 27.5% | 12.6% | 31.5% | 0.12 | 0.15 | 0.11 |
| AET | 22.4% | 2.8% | 21.7% | -0.04 | 0.06 | 0.14 |
| JWN | 19.6% | 74.7% | 74.5% | 0.39 | 0.24 | 0.50 |
| KMI | 11.8% | 43.0% | 43.7% | 0.23 | 0.32 | 0.38 |
| CBS | 32.8% | 15.2% | 40.4% | 0.22 | 0.00 | 0.09 |
| CTL | 11.2% | 3.5% | 11.0% | 0.17 | 0.33 | 0.31 |
| MRO | 12.9% | 30.3% | 30.1% | 0.27 | 0.30 | 0.37 |
| VLO | 9.1% | 12.4% | 16.5% | 0.22 | 0.33 | 0.27 |
| AA | 3.3% | 8.2% | 7.6% | 0.20 | 0.18 | 0.35 |
| GD | 17.5% | 30.6% | 38.4% | 0.14 | 0.14 | 0.21 |

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|---|---|---|---|---|---|---|
| O | 14.6% | 21.5% | 24.3% | -0.13 | -0.03 | 0.26 |
| KSS | 13.3% | 60.1% | 59.9% | 0.33 | 0.41 | 0.35 |
| GIS | 7.5% | 10.7% | 11.8% | 0.28 | 0.30 | 0.26 |
| AIG | 31.1% | 21.0% | 35.0% | 0.13 | 0.02 | 0.36 |
| TJX | 34.6% | 55.4% | 56.9% | 0.59 | 0.42 | 0.49 |
| LB | 12.5% | 62.3% | 66.1% | 0.56 | 0.50 | 0.52 |
| MYL | 22.2% | 66.3% | 68.6% | 0.49 | 0.33 | 0.45 |
| EA | 36.0% | 39.7% | 44.8% | 0.16 | 0.15 | 0.37 |
| SLB | 11.0% | 5.8% | 12.6% | 0.04 | -0.02 | 0.21 |
| CCL | 19.9% | 27.8% | 35.9% | 0.35 | 0.30 | 0.37 |
| DE | 12.3% | 72.0% | 72.6% | 0.33 | 0.19 | 0.48 |
| KHC | 58.2% | 47.3% | 60.5% | 0.29 | 0.07 | 0.21 |
| HPE | 22.8% | 52.3% | 58.1% | 0.23 | 0.15 | 0.40 |
| MDLZ | 25.4% | 8.6% | 27.0% | 0.19 | 0.24 | 0.32 |
| USB | 16.8% | 11.6% | 18.2% | -0.11 | 0.11 | 0.32 |
| FL | 30.2% | 84.2% | 88.0% | 0.69 | 0.20 | 0.59 |
| HUM | 20.4% | 9.8% | 24.0% | 0.19 | 0.15 | 0.34 |
| HON | 11.0% | 8.5% | 12.8% | 0.19 | -0.01 | 0.25 |
| ISRG | 11.7% | 52.5% | 53.6% | 0.33 | 0.08 | 0.09 |
| SO | 36.6% | 15.6% | 40.7% | 0.04 | 0.33 | 0.27 |
| INCY | 21.0% | 55.0% | 54.6% | 0.44 | 0.15 | 0.65 |
| LRCX | 17.8% | 35.6% | 41.7% | 0.38 | 0.14 | 0.39 |
| MON | 22.1% | 47.0% | 49.4% | 0.22 | 0.33 | 0.56 |
| APA | 11.2% | 15.5% | 21.2% | 0.09 | 0.15 | 0.13 |
| VIAB | 8.9% | 67.5% | 67.5% | 0.44 | 0.23 | 0.29 |
| MAR | 21.5% | 33.8% | 40.8% | 0.35 | 0.22 | 0.49 |
| ALXN | 21.9% | 41.2% | 41.4% | 0.31 | 0.17 | 0.45 |
| EXPE | 8.7% | 24.2% | 23.6% | 0.27 | 0.14 | 0.27 |
| TXN | 17.8% | 9.4% | 19.2% | 0.10 | 0.23 | 0.30 |
| MCHP | 22.5% | 25.3% | 34.2% | 0.05 | 0.16 | 0.31 |
| CI | 12.7% | 13.6% | 20.2% | 0.05 | 0.09 | 0.25 |
| RCL | 18.0% | 37.7% | 43.0% | 0.36 | 0.06 | 0.10 |
| ACN | 20.8% | 52.3% | 52.1% | 0.23 | 0.24 | 0.47 |
| PHM | 18.7% | 20.4% | 26.8% | 0.17 | 0.32 | 0.42 |
| TSCO | 5.1% | 43.7% | 43.2% | 0.03 | 0.30 | 0.35 |
| YUM | 33.9% | 2.7% | 34.1% | 0.01 | 0.15 | 0.20 |
| ALK | 29.7% | -0.8% | 30.5% | -0.06 | 0.05 | 0.00 |
| AMD | 32.2% | 57.8% | 61.8% | 0.62 | 0.42 | 0.57 |
| TRIP | 19.3% | 55.6% | 57.6% | 0.51 | 0.27 | 0.47 |
| NUE | 9.0% | 20.5% | 20.0% | 0.33 | 0.35 | 0.46 |
| ADI | 55.2% | 60.6% | 72.0% | 0.29 | 0.05 | 0.38 |

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|---|---|---|---|---|---|---|
| HRL | 9.6% | 72.0% | 71.8% | 0.21 | 0.30 | 0.43 |
| OXY | 41.2% | 21.5% | 41.3% | 0.14 | 0.06 | 0.28 |
| NEM | 24.0% | 16.8% | 26.7% | 0.06 | 0.13 | 0.22 |
| K | 19.4% | 10.3% | 21.0% | 0.05 | 0.38 | 0.38 |
| DUK | 28.1% | 0.1% | 26.6% | -0.20 | 0.00 | -0.02 |
| GPS | 16.8% | 49.6% | 53.7% | 0.46 | 0.39 | 0.41 |
| APC | 12.2% | 16.8% | 21.1% | 0.33 | 0.19 | 0.34 |
| DLTR | 16.8% | 42.2% | 43.6% | 0.30 | 0.20 | 0.39 |
| COH | 6.9% | 83.9% | 84.7% | 0.29 | 0.32 | 0.28 |
| CHTR | 12.9% | 45.6% | 48.7% | 0.22 | 0.08 | 0.30 |
| ESRX | 24.6% | 26.4% | 34.1% | 0.13 | -0.01 | 0.28 |
| SPG | 35.7% | 16.9% | 38.5% | 0.12 | -0.14 | 0.26 |
| AMT | 31.8% | 12.7% | 32.3% | -0.03 | 0.21 | 0.26 |
| HPQ | 13.5% | 48.6% | 48.6% | 0.37 | 0.21 | 0.27 |
| PXD | 22.3% | 66.0% | 66.0% | 0.31 | 0.05 | 0.15 |
| MAT | 28.6% | 55.5% | 59.9% | 0.30 | 0.08 | 0.27 |
| COG | 9.4% | 0.0% | 8.7% | 0.20 | 0.15 | 0.17 |
| D | 34.7% | 4.6% | 36.9% | 0.18 | 0.02 | 0.05 |
| COF | 13.7% | 48.0% | 48.5% | 0.17 | 0.25 | 0.29 |
| STZ | 15.2% | 43.8% | 43.8% | 0.11 | 0.16 | 0.21 |
| AFL | 29.9% | 3.1% | 30.5% | -0.15 | 0.19 | 0.20 |
| MNST | 24.5% | 57.3% | 60.0% | 0.41 | 0.16 | 0.30 |
| HOG | 12.4% | 82.2% | 82.1% | 0.38 | 0.26 | 0.41 |
| SYMC | 20.1% | 37.6% | 45.1% | 0.34 | 0.16 | 0.40 |
| ADSK | 9.4% | 61.7% | 62.0% | 0.28 | 0.07 | 0.42 |
| DG | 8.3% | 46.6% | 46.1% | 0.27 | 0.13 | 0.38 |
| CTSH | 36.0% | 8.3% | 36.1% | 0.09 | 0.15 | 0.20 |
| NOV | 9.5% | -0.5% | 7.5% | 0.02 | 0.08 | 0.17 |
| EW | 23.8% | 16.7% | 29.2% | -0.01 | 0.10 | 0.26 |
| TRV | 9.1% | 27.4% | 30.4% | -0.05 | 0.03 | 0.25 |
| NDAQ | 21.9% | -1.0% | 20.3% | -0.13 | 0.11 | 0.12 |
| AAP | 9.1% | 84.9% | 84.8% | 0.62 | 0.23 | 0.54 |
| ILMN | 9.7% | 69.8% | 69.5% | 0.30 | 0.34 | 0.30 |
| SYK | 8.6% | 8.8% | 11.5% | 0.10 | 0.24 | 0.18 |
| MET | 20.3% | -0.7% | 18.3% | 0.01 | 0.06 | 0.14 |
| PSX | 14.6% | 2.3% | 15.0% | -0.14 | 0.01 | 0.04 |
| AZO | 14.5% | 70.8% | 70.5% | 0.56 | 0.30 | 0.59 |
| BAX | 8.7% | 2.0% | 9.5% | 0.06 | 0.02 | 0.07 |
| ANTM | 11.5% | 10.6% | 15.6% | 0.02 | 0.05 | 0.17 |
| APD | 10.1% | 22.7% | 24.1% | -0.05 | 0.17 | 0.21 |
| PRGO | 8.5% | 52.0% | 59.6% | 0.36 | 0.34 | 0.51 |

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|---|---|---|---|---|---|---|
| LEN | 36.0% | 34.4% | 46.5% | 0.33 | 0.29 | 0.48 |
| STX | 10.8% | 74.3% | 74.2% | 0.30 | 0.16 | 0.29 |
| DVN | 10.8% | 4.4% | 11.0% | 0.10 | 0.23 | 0.27 |
| BBT | 19.8% | 14.4% | 25.7% | -0.06 | 0.25 | 0.31 |
| ROST | 16.2% | 62.6% | 64.5% | 0.49 | 0.47 | 0.45 |
| ALB | 34.6% | 57.4% | 63.3% | 0.38 | 0.18 | 0.28 |
| TSN | 15.8% | 47.8% | 48.5% | 0.28 | 0.24 | 0.37 |
| CF | 16.5% | 16.2% | 22.2% | 0.19 | 0.24 | 0.27 |
| EMR | 29.8% | 14.1% | 32.8% | 0.18 | 0.07 | 0.30 |
| NSC | 26.3% | 4.0% | 24.4% | 0.13 | 0.12 | 0.17 |
| KEY | 11.7% | 5.9% | 13.7% | 0.05 | 0.25 | 0.25 |
| TIF | 13.1% | 61.9% | 61.8% | 0.38 | -0.04 | 0.35 |
| HP | 15.3% | 24.1% | 26.7% | 0.17 | 0.03 | 0.35 |
| PPG | 52.9% | 49.9% | 57.9% | 0.14 | 0.01 | 0.16 |
| NEE | 7.8% | 0.3% | 6.7% | -0.03 | 0.14 | 0.13 |
| PX | 17.2% | 6.1% | 18.6% | -0.03 | 0.25 | 0.35 |
| KORS | 12.3% | 66.2% | 67.7% | 0.44 | 0.12 | 0.42 |
| HAS | 17.6% | 68.5% | 71.4% | 0.32 | 0.16 | 0.27 |
| BSX | 7.4% | 21.0% | 20.4% | 0.32 | 0.31 | 0.36 |
| PPL | 5.1% | 1.6% | 5.0% | 0.14 | 0.25 | 0.26 |
| PNC | 23.3% | 12.2% | 29.8% | 0.11 | 0.10 | 0.18 |
| UNP | 23.8% | 26.3% | 35.7% | 0.08 | 0.05 | 0.19 |
| BK | 29.0% | 12.1% | 30.3% | 0.00 | 0.28 | 0.12 |
| NOC | 34.4% | 4.5% | 35.4% | -0.04 | 0.16 | 0.14 |
| COL | 19.2% | 58.2% | 60.6% | 0.49 | 0.16 | 0.47 |
| SPLS | 28.3% | 43.8% | 53.7% | 0.41 | 0.25 | 0.21 |
| PGR | 11.0% | 13.0% | 16.0% | 0.22 | 0.24 | 0.29 |
| SCHW | 15.9% | 33.7% | 38.0% | 0.13 | 0.43 | 0.43 |
| PRU | 5.5% | 9.4% | 14.4% | 0.10 | 0.23 | 0.19 |
| CME | 16.6% | -3.1% | 14.8% | -0.03 | 0.02 | 0.02 |
| RHT | 22.8% | 70.3% | 70.6% | 0.33 | 0.21 | 0.20 |
| XLNX | 8.8% | 30.1% | 29.5% | 0.27 | 0.19 | 0.48 |
| FMC | 5.0% | 61.4% | 64.3% | 0.26 | 0.10 | 0.43 |
| ALL | 32.9% | 17.8% | 36.3% | 0.07 | 0.01 | 0.25 |
| CXO | 16.9% | 42.1% | 43.2% | 0.01 | 0.11 | 0.19 |
| SIG | 17.1% | 56.3% | 55.8% | 0.55 | 0.14 | 0.47 |
| CAH | 7.9% | 65.2% | 66.1% | 0.36 | 0.08 | 0.40 |
| RRC | 17.3% | 38.7% | 41.7% | 0.30 | 0.18 | 0.28 |
| KMB | 37.3% | 13.1% | 40.7% | 0.10 | -0.09 | 0.12 |
| CERN | 29.3% | -1.4% | 30.8% | 0.04 | 0.07 | -0.05 |
| ICE | 30.9% | 12.1% | 31.8% | -0.12 | 0.30 | 0.31 |

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|---|---|---|---|---|---|---|
| ORLY | 9.5% | 33.4% | 34.2% | 0.61 | -0.04 | 0.53 |
| OKE | 39.1% | 29.4% | 46.5% | 0.53 | 0.13 | 0.36 |
| GOOGL | 24.4% | 23.5% | 34.5% | 0.52 | 0.25 | 0.43 |
| NRG | 39.1% | 87.0% | 87.1% | 0.46 | 0.18 | 0.37 |
| PVH | 34.4% | 68.9% | 70.6% | 0.40 | 0.38 | 0.47 |
| MOS | 30.3% | 27.4% | 50.0% | 0.37 | 0.23 | 0.31 |
| CPB | 43.4% | 54.6% | 70.4% | 0.35 | 0.14 | 0.27 |
| HOLX | 31.8% | 50.8% | 62.8% | 0.29 | 0.15 | 0.13 |
| MCK | 7.4% | 54.8% | 54.8% | 0.26 | 0.36 | 0.41 |
| HES | 19.3% | 25.8% | 31.6% | 0.22 | 0.23 | 0.37 |
| MPC | 25.1% | 9.0% | 26.2% | 0.05 | -0.05 | 0.13 |
| WMB | 31.1% | -0.4% | 29.8% | -0.16 | 0.11 | 0.20 |
| KMX | 40.3% | 62.7% | 64.8% | 0.43 | 0.35 | 0.47 |
| NTAP | 13.8% | 54.1% | 54.8% | 0.40 | 0.45 | 0.49 |
| ES | 5.9% | 8.9% | 13.5% | 0.38 | -0.05 | 0.20 |
| CMI | 10.9% | 59.4% | 60.4% | 0.32 | 0.02 | 0.24 |
| DPS | 19.5% | 12.3% | 27.5% | 0.25 | 0.21 | 0.34 |
| FITB | 13.2% | 13.4% | 19.4% | 0.12 | 0.27 | 0.27 |
| XEC | 14.1% | 7.5% | 14.2% | 0.24 | 0.13 | 0.32 |
| DLR | 16.0% | 61.3% | 61.0% | 0.23 | 0.01 | 0.15 |
| DFS | 28.3% | 19.1% | 34.1% | 0.14 | 0.08 | 0.28 |
| HSY | 17.6% | 16.9% | 27.5% | 0.09 | 0.28 | 0.28 |
| VFC | 36.4% | 16.7% | 39.4% | 0.03 | 0.20 | 0.30 |
| MCO | 29.5% | 14.3% | 36.7% | 0.01 | 0.02 | 0.15 |
| STT | 8.2% | -0.2% | 5.9% | -0.02 | 0.23 | 0.18 |
| EL | 25.4% | 46.0% | 47.7% | 0.51 | 0.25 | 0.45 |
| INTU | 34.8% | 31.8% | 50.5% | 0.31 | 0.32 | 0.44 |
| IFF | 23.7% | 22.2% | 35.1% | 0.15 | 0.20 | 0.17 |
| FOX | 32.5% | 12.3% | 35.5% | 0.10 | 0.13 | 0.27 |
| DISH | 22.9% | 24.9% | 30.8% | 0.09 | 0.25 | 0.37 |
| RF | 14.5% | 21.6% | 25.9% | 0.08 | 0.37 | 0.28 |
| EXC | 13.5% | 3.5% | 13.3% | -0.03 | -0.01 | 0.18 |
| ABC | 8.6% | 46.2% | 47.4% | 0.38 | 0.13 | 0.21 |
| BDX | 47.5% | 47.9% | 62.3% | 0.29 | -0.14 | 0.28 |
| DHI | 24.7% | 13.2% | 24.0% | 0.19 | 0.09 | 0.33 |
| TMO | 19.1% | 11.4% | 28.3% | 0.13 | 0.18 | 0.29 |
| CBOE | 31.0% | 10.8% | 35.8% | 0.03 | 0.24 | 0.26 |
| PSA | 13.2% | 6.4% | 13.4% | 0.02 | 0.03 | 0.11 |
| CLX | 36.2% | 7.2% | 36.8% | -0.07 | 0.09 | 0.21 |
| EQIX | 20.7% | 19.5% | 30.0% | -0.10 | 0.13 | 0.25 |
| ED | 17.6% | 2.1% | 15.9% | 0.05 | 0.06 | 0.26 |

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|---|---|---|---|---|---|---|
| CHD | 21.2% | 5.5% | 23.3% | -0.04 | 0.35 | 0.29 |
| VTR | 33.8% | 11.8% | 33.6% | -0.21 | -0.11 | 0.12 |
| DRI | 10.9% | 75.1% | 75.0% | 0.39 | 0.38 | 0.34 |
| AKAM | 11.4% | 74.8% | 74.5% | 0.34 | 0.01 | 0.49 |
| SHW | 3.6% | 51.9% | 51.4% | 0.18 | 0.10 | 0.14 |
| ADS | 13.4% | 39.1% | 40.1% | 0.09 | 0.24 | 0.31 |
| FAST | 18.8% | 82.2% | 82.2% | 0.53 | 0.17 | 0.42 |
| CCI | 18.6% | 16.7% | 27.0% | 0.38 | -0.06 | 0.19 |
| ADM | 11.2% | 12.5% | 13.3% | 0.27 | 0.19 | 0.33 |
| JNPR | 14.8% | 27.2% | 32.3% | 0.14 | 0.01 | 0.27 |
| ETFC | 16.8% | 44.9% | 45.7% | 0.12 | 0.20 | 0.31 |
| STI | 23.7% | 5.0% | 21.6% | 0.04 | 0.21 | 0.23 |
| APH | 5.7% | 8.7% | 8.9% | 0.04 | 0.05 | 0.13 |
| ADP | 11.6% | 26.7% | 30.0% | 0.66 | 0.08 | 0.49 |
| ITW | 12.2% | 29.6% | 30.0% | 0.26 | 0.13 | 0.30 |
| AWK | 19.2% | 7.2% | 20.1% | 0.20 | -0.03 | 0.16 |
| DLPH | 21.5% | 7.6% | 21.5% | 0.14 | 0.08 | 0.24 |
| PLD | 23.4% | 1.1% | 21.0% | 0.08 | 0.13 | 0.18 |
| SJM | 31.8% | 50.3% | 67.6% | 0.42 | 0.11 | 0.31 |
| RL | 58.2% | 55.3% | 69.8% | 0.25 | 0.17 | 0.40 |
| FE | 22.2% | 9.2% | 24.0% | 0.20 | 0.01 | 0.20 |
| KIM | 36.5% | 9.7% | 40.8% | 0.10 | -0.01 | 0.28 |
| SWK | 20.0% | 42.0% | 45.4% | -0.01 | 0.14 | 0.34 |
| TROW | 12.0% | 18.5% | 22.9% | -0.06 | 0.32 | 0.35 |
| HRB | 12.3% | 65.1% | 64.7% | 0.42 | 0.06 | 0.48 |
| MSI | 11.2% | 39.0% | 46.8% | 0.31 | 0.29 | 0.49 |
| SYY | 4.7% | 11.6% | 13.2% | 0.27 | 0.02 | 0.13 |
| FIS | 21.4% | 7.5% | 24.4% | 0.14 | 0.03 | 0.13 |
| WM | 6.5% | 10.4% | 13.0% | -0.01 | -0.02 | 0.14 |
| GWW | 25.1% | 69.4% | 69.1% | 0.38 | 0.15 | 0.45 |
| CA | 11.6% | 52.6% | 52.1% | 0.34 | 0.08 | 0.36 |
| QRVO | 27.8% | 14.9% | 29.0% | 0.31 | 0.15 | 0.26 |
| HBAN | 21.4% | 39.9% | 43.1% | 0.18 | 0.11 | 0.35 |
| MAC | 9.0% | 10.5% | 16.5% | 0.16 | 0.17 | 0.31 |
| GGP | 16.6% | 34.1% | 37.7% | 0.40 | -0.16 | 0.18 |
| NBL | 26.7% | 25.1% | 35.4% | 0.30 | -0.13 | 0.32 |
| KLAC | 18.3% | 19.1% | 25.1% | 0.25 | 0.12 | 0.29 |
| NWL | 16.5% | 49.6% | 52.0% | 0.18 | -0.10 | 0.06 |
| HBI | 24.8% | 31.8% | 45.6% | 0.16 | -0.09 | 0.23 |
| CNC | 35.5% | 11.5% | 39.9% | 0.13 | 0.20 | 0.21 |
| DISCA | 11.7% | 74.3% | 74.0% | 0.53 | -0.03 | 0.50 |

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|---|---|---|---|---|---|---|
| JBHT | 12.0% | 33.3% | 38.3% | 0.34 | 0.28 | 0.32 |
| TDG | 30.8% | 23.8% | 36.1% | 0.31 | -0.19 | 0.25 |
| GRMN | 11.6% | 65.3% | 65.3% | 0.29 | 0.23 | 0.19 |
| URI | 10.7% | 48.8% | 48.9% | 0.23 | 0.36 | 0.37 |
| NFX | 5.7% | 21.8% | 21.5% | 0.16 | 0.19 | 0.21 |
| MKC | 11.4% | 40.1% | 51.3% | 0.54 | -0.01 | 0.36 |
| EQT | 25.5% | 51.8% | 52.3% | 0.35 | 0.10 | 0.53 |
| BEN | 7.5% | 5.8% | 10.5% | 0.17 | 0.17 | 0.12 |
| PH | 8.4% | 0.8% | 7.3% | 0.17 | 0.23 | 0.25 |
| DOV | 18.0% | 13.4% | 20.3% | 0.16 | 0.25 | 0.35 |
| AME | 24.2% | 1.9% | 26.2% | -0.04 | -0.04 | -0.09 |
| AEP | 0.6% | 8.8% | 8.0% | -0.12 | 0.17 | 0.12 |
| ETN | 23.0% | 38.3% | 40.0% | 0.31 | 0.18 | 0.22 |
| HCA | 36.0% | 33.3% | 47.4% | 0.28 | 0.11 | 0.22 |
| XYL | 21.6% | 11.6% | 26.1% | -0.05 | 0.27 | 0.08 |
| CAG | 29.2% | 15.8% | 33.9% | 0.32 | 0.13 | 0.29 |
| RIG | 11.8% | 4.3% | 13.4% | 0.19 | 0.03 | 0.14 |
| A | 24.4% | 53.7% | 53.0% | 0.13 | 0.17 | 0.24 |
| HCP | 26.9% | 1.4% | 25.0% | 0.07 | 0.06 | 0.12 |
| FISV | 10.5% | 16.5% | 16.6% | 0.07 | -0.01 | 0.19 |
| XEL | 11.2% | 1.7% | 11.0% | 0.04 | 0.10 | 0.14 |
| MTB | 20.9% | 21.5% | 26.6% | -0.03 | 0.12 | 0.19 |
| SNI | 15.4% | 86.2% | 86.3% | 0.61 | 0.06 | 0.57 |
| PAYX | 22.1% | 32.4% | 36.4% | 0.55 | 0.22 | 0.41 |
| DHR | 6.5% | 60.0% | 59.6% | 0.37 | 0.10 | 0.26 |
| IR | 4.0% | 19.7% | 19.9% | 0.31 | 0.27 | 0.36 |
| TSO | 11.9% | 6.7% | 13.3% | 0.29 | 0.12 | 0.36 |
| CMA | 8.9% | 9.9% | 13.1% | 0.29 | 0.12 | 0.21 |
| EIX | 5.6% | 4.4% | 6.8% | 0.09 | -0.13 | 0.10 |
| AMP | 10.7% | 13.4% | 21.7% | 0.05 | 0.14 | 0.18 |
| VAR | 9.5% | 9.6% | 16.4% | 0.03 | 0.33 | 0.23 |
| HSIC | 48.8% | 40.9% | 60.3% | 0.36 | 0.27 | 0.31 |
| BHI | 10.9% | 2.6% | 11.6% | 0.07 | 0.04 | 0.23 |
| ZION | 15.2% | 3.4% | 14.9% | -0.21 | 0.13 | 0.13 |
| YHOO | 78.7% | 37.0% | 82.3% | 0.40 | 0.23 | 0.29 |
| CTXS | 33.2% | 45.3% | 48.5% | 0.33 | 0.10 | 0.26 |
| WYN | 6.5% | 40.5% | 40.4% | 0.23 | -0.03 | 0.27 |
| KSU | 22.1% | 6.0% | 21.9% | 0.23 | 0.31 | 0.24 |
| DGX | 8.4% | 53.1% | 52.5% | 0.21 | 0.08 | 0.26 |
| SRCL | 22.0% | 17.3% | 26.1% | 0.20 | 0.27 | 0.43 |
| LVLT | 12.6% | -2.1% | 12.7% | -0.03 | -0.19 | -0.15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| GPN | 26.0% | 15.5% | 37.1% | -0.08 | 0.26 | 0.16 |
| ESS | 5.6% | 6.2% | 9.8% | 0.20 | -0.06 | 0.06 |
| CNP | 3.0% | -0.2% | 1.8% | 0.15 | 0.07 | 0.17 |
| COO | 16.9% | 37.7% | 43.9% | 0.11 | 0.23 | 0.22 |
| PEG | 26.2% | 11.8% | 29.6% | 0.04 | 0.34 | 0.36 |
| BLL | 41.7% | 4.3% | 41.0% | -0.12 | 0.01 | 0.12 |
| TEL | 21.1% | 10.8% | 25.3% | -0.16 | 0.22 | 0.26 |
| LYB | 20.5% | 7.6% | 19.9% | -0.16 | -0.11 | 0.16 |
| HST | 27.8% | 16.1% | 28.9% | 0.10 | 0.08 | 0.18 |
| XRX | 47.6% | 5.7% | 51.8% | 0.06 | 0.30 | 0.16 |
| HIG | 4.9% | -1.0% | 2.4% | -0.02 | 0.13 | 0.16 |
| CBG | 29.3% | -1.9% | 26.7% | 0.05 | 0.10 | 0.13 |
| WY | 4.6% | 12.9% | 12.5% | -0.21 | 0.13 | 0.23 |
| EXR | 6.1% | 22.3% | 24.1% | 0.28 | 0.11 | 0.29 |
| HCN | 20.8% | 8.4% | 22.8% | 0.04 | 0.15 | 0.36 |
| BWA | 8.1% | 2.0% | 6.0% | 0.02 | 0.21 | 0.20 |
| EMN | 13.7% | 0.7% | 11.7% | 0.01 | 0.21 | 0.19 |
| ZTS | 35.4% | 11.8% | 36.9% | 0.22 | 0.13 | 0.17 |
| NTRS | 31.5% | 77.4% | 83.0% | 0.13 | 0.15 | 0.25 |
| LH | 25.5% | 6.1% | 26.9% | -0.14 | 0.12 | 0.19 |
| COTY | 26.6% | 87.7% | 89.8% | 0.36 | 0.04 | 0.44 |
| VMC | 21.7% | 25.1% | 30.4% | 0.35 | 0.35 | 0.42 |
| IPG | 19.8% | 58.5% | 58.1% | 0.24 | 0.21 | 0.33 |
| AES | 13.8% | 35.4% | 45.9% | 0.23 | 0.41 | 0.29 |
| GT | 15.2% | 65.2% | 79.4% | 0.22 | -0.17 | 0.28 |
| RAI | 23.2% | -2.8% | 20.8% | 0.13 | 0.02 | 0.10 |
| FTI | 4.6% | 6.7% | 9.4% | 0.05 | 0.24 | 0.12 |
| EQR | 32.1% | 3.5% | 34.7% | -0.01 | 0.26 | 0.18 |
| IP | 11.2% | 4.7% | 12.5% | -0.09 | -0.01 | 0.17 |
| GPC | 22.1% | 38.1% | 41.8% | 0.57 | 0.10 | 0.33 |
| SEE | 13.1% | 56.7% | 57.3% | 0.33 | 0.15 | 0.34 |
| SRE | 18.7% | 11.8% | 21.3% | 0.24 | 0.41 | 0.48 |
| JEC | 1.0% | 20.8% | 19.5% | 0.23 | -0.03 | 0.21 |
| DTE | 8.5% | -0.4% | 6.8% | 0.15 | 0.16 | -0.02 |
| MMC | 10.0% | 16.8% | 25.3% | 0.08 | 0.28 | 0.23 |
| PCG | 17.3% | 4.0% | 16.4% | -0.03 | -0.05 | 0.21 |
| EFX | 16.1% | 3.0% | 16.2% | -0.05 | -0.13 | -0.06 |
| FLR | 7.1% | 59.4% | 58.8% | 0.59 | 0.11 | 0.27 |
| DVA | 13.0% | 36.6% | 37.1% | 0.37 | 0.01 | 0.27 |
| UHS | 8.9% | 57.1% | 56.8% | 0.32 | 0.06 | 0.16 |
| NLSN | 30.9% | 7.0% | 33.4% | 0.24 | 0.19 | 0.14 |

| | | | | | | |
|---|---|---|---|---|---|---|
| IRM | 8.4% | 32.7% | 34.6% | 0.17 | -0.01 | 0.25 |
| TAP | 27.7% | 31.9% | 32.3% | 0.17 | 0.06 | 0.15 |
| PWR | 9.9% | 12.9% | 21.2% | 0.12 | 0.18 | 0.12 |
| ECL | 28.0% | 24.7% | 36.6% | 0.00 | 0.37 | 0.38 |
| LNC | 18.2% | -1.1% | 16.9% | -0.01 | 0.06 | 0.17 |
| ZBH | 31.6% | 25.5% | 36.0% | 0.31 | -0.16 | 0.34 |
| VNO | 21.1% | 23.3% | 27.4% | 0.09 | 0.09 | 0.29 |
| MAS | 36.1% | -3.9% | 34.1% | -0.04 | 0.04 | 0.15 |
| RSG | 25.2% | 1.1% | 22.2% | -0.07 | -0.12 | 0.08 |
| SCG | 42.5% | 41.1% | 51.9% | 0.42 | 0.03 | 0.29 |
| TXT | 12.0% | 8.3% | 16.3% | 0.23 | 0.20 | 0.32 |
| ROK | 17.2% | 7.0% | 16.3% | 0.01 | 0.23 | 0.30 |
| FLS | 9.0% | 72.9% | 72.4% | 0.47 | 0.18 | 0.45 |
| MNK | 9.8% | 25.7% | 35.3% | 0.43 | 0.24 | 0.27 |
| XRAY | 30.5% | 38.3% | 52.2% | 0.39 | -0.05 | 0.25 |
| WHR | 5.2% | 17.0% | 19.2% | 0.35 | 0.44 | 0.49 |
| OMC | 1.8% | 25.1% | 24.9% | 0.33 | 0.10 | 0.33 |
| LLL | 16.6% | 19.6% | 22.7% | 0.16 | -0.06 | 0.28 |
| PFG | 32.7% | 5.9% | 35.1% | -0.08 | -0.15 | 0.08 |
| AVB | -0.2% | 24.4% | 23.5% | 0.26 | -0.16 | -0.03 |
| EVHC | 17.5% | 44.4% | 46.6% | 0.20 | 0.27 | 0.44 |
| WU | 18.2% | 10.6% | 22.6% | 0.11 | 0.01 | 0.25 |
| IDXX | 26.6% | 18.8% | 42.5% | 0.08 | 0.09 | 0.14 |
| PBCT | 14.4% | 18.5% | 23.8% | 0.06 | 0.04 | 0.33 |