VanEck® | BUZZ

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# Join the Swarm
## Invest in the Power of Collective Conviction

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# What people are saying about stocks matters more than ever before—and they are saying a lot more than ever before.

Today's individual investors collaborate, discuss, share insights, express opinions and debate the merits of investment opportunities across a range of online platforms. Tapping into the sentiment from these communities can identify trends that potentially impact stock performance.

In this white paper, we will explore:

- Sentiment and the power of collective conviction.
- How the emergence of investment-specific online platforms changed the game for individual investors.
- Measuring, tracking and understanding the impact of sentiment.
- Incorporating sentiment insights into a portfolio.

## Sentiment Drives Markets

Market participants have long recognized that investor sentiment plays an important role within price discovery. Sentiment is often cited as the leading cause for many of the world's largest asset bubbles—from the Dutch tulip bubble of 1637 and the great South Sea bubble of 1720, to recent events such as the dotcom bubble of 2000 and the housing bubble of 2008.

These extreme cases have led many people in the investment world to conclude that sentiment should be viewed through the lens of a contrarian indicator. The sentiment as a contrarian indicator stereotype demonstrates the investment community's belief that sentiment influences the price discovery process of

stocks, yet without data, the hypothesis could not be statistically confirmed.

The phrase "the wisdom of crowds" suggests that accurate verdicts can be achieved by averaging the opinions and insights of large, diverse groups of people who possess varied types of information[1]. Online user-generated content, specifically from the broader individual investor community, provides a rich and diverse source from which to draw insights from their collective wisdom. These aggregate views represent the collective conviction of the community, and these sentiments may be used to help identify those stocks which may be poised to outperform the broader market.

## The Beginnings of Stock Sentiment

The Tontine Coffee House at 82 Wall Street, built by a group of stockbrokers in 1793, served as both a club and meeting place. The growth of trade proceedings within its halls led to the creation of the New York Stock and Exchange Board, precursor to the present-day New York Stock Exchange (NYSE).

John Lambert, an English traveller, noted in 1807: "The Tontine Coffee House was filled with underwriters, brokers, merchants, traders, and politicians; selling, purchasing, trafficking, or insuring; some reading, others eagerly inquiring the news [...] The steps and balcony of the coffee house were crowded with people bidding, or listening to the several auctioneers [...] Everything was in motion; all was life, bustle and activity..."

The sentiments of the crowd that first gathered in the Coffee House halls, and later on the floor of the NYSE, influenced stock prices as hopes—and occasionally fear—swept through the crowded trading pits, directly impacting the price discovery process.

[1]Expert Stock Picker: The Wisdom (Experts in) the Crowds, Shawndra Hill, University of Pennsylvania, 2011.

## Emergence of Investment Specific Online Platforms: An Industry Game Changer

StockTwits was an early pioneer in creating a social platform specifically tailored to the active investing community. StockTwits created the "Cashtag" ($+"TICKER"), a standardized structure to track stock specific discussions. Twitter's adoption of the Cashtag in the summer of 2012 further fueled the growth of online investment discussion.

Today, millions of people voluntarily share their views on investment ideas and stock portfolio holdings across online platforms. Over the past few years, user-generated content has accelerated at an exponential

rate. The result has been a proliferation in the breadth of discussion, depth of data and diversity of subject matter.

Sentiment indicators derived from insights from online platforms have a distinct advantage relative to traditional survey-based approaches. User comments within the social media landscape are voluntarily generated and posted in real-time. The desire for collaboration and insight self-regulates the discussion, while fostering an environment with a high incentive for truth-telling.

**Social Platform Message Volume Growth**
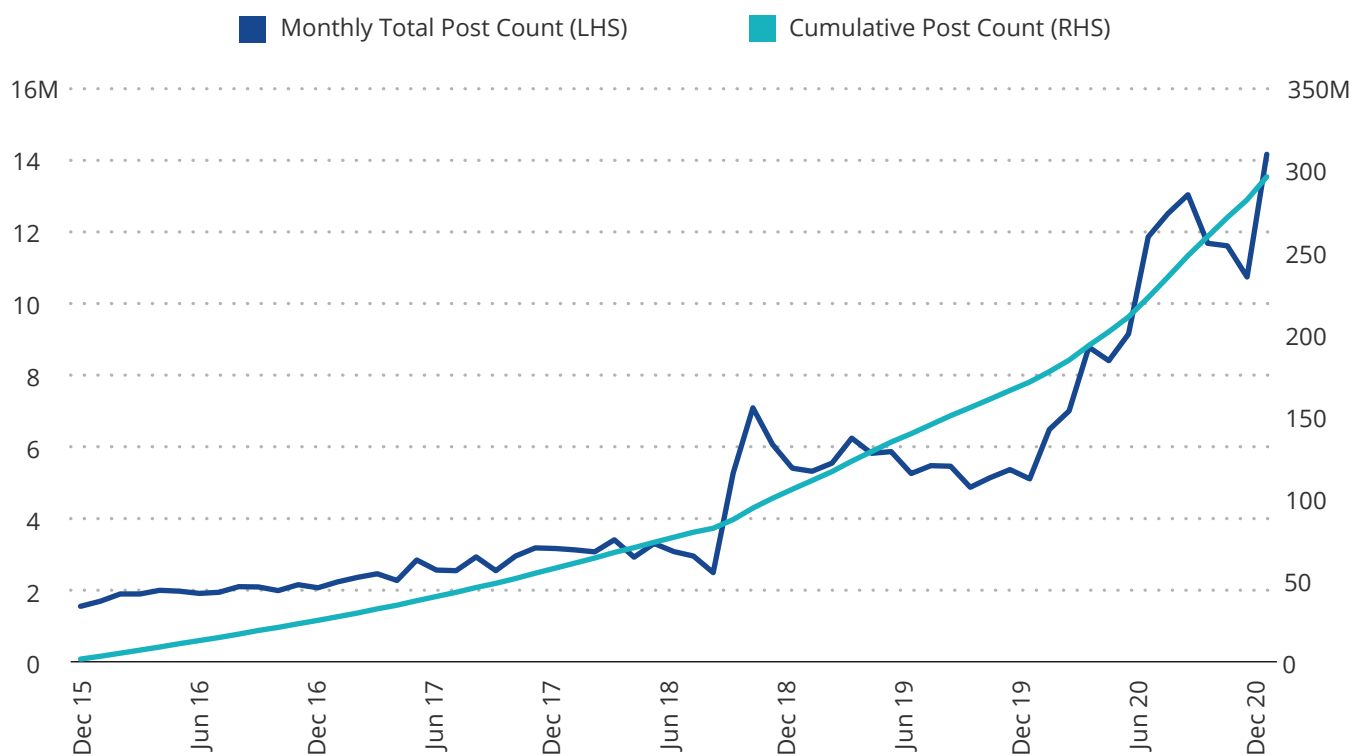


Source: Buzz Holdings ULC

Notably, in the report "Identification of a Social Media Equity Factor Derived Directly from Tweet Sentiments", professors Jim Liew and Tamas Budavari found "significant evidence that the characteristics of securities derived from social media information sources have significant power in explaining the time-series of daily returns." Patrick Houlihan and Germán Creamer found a similar relationship in their research, "Leveraging Social Media to Predict Continuation and Reversal in Asset Prices," which also showed "that message volume and sentiment from StockTwit messages contained information about future price changes." The evidence from academic research on the potential link between sentiment insights derived from online platforms and future stock performance is compelling.

## Sentiment Analysis Was First Deployed for Brand and Consumer Analytics

Consumer product companies were the first to use predictive analysis mined from vast online datasets to help them identify sentiment insights for marketing and managing their brands. Across various social media platforms, individuals routinely express their opinions of a product, experiences within a store, and general encounters with various brands. Large technology companies such as Salesforce.com and IBM offer numerous big data analytical tools for brand and sentiment monitoring to help the world's leading brands capture insights from online and alternative datasets.

Investors have historically relied on rudimentary survey-based measures of sentiment for insights. Investor surveys such as the University of Michigan Consumer Sentiment Index and the AAII investor sentiment survey suffer from limitations associated with traditional survey-based approaches, including negative bias potential, low incentive for truth-telling and reporting time-lags.

Other attempts at determining investor sentiment included offline (phone and paper) surveying, in-store questionnaires and other market-related proxies, such as put/call ratios, retail money flows and measures of volatility. Market prognosticators frequently appear across traditional media outlets, often claiming insight relating to investor sentiment levels. Historical approaches to measuring investor sentiment were flawed, often based on intuition and not data driven.

## COVID-19 Impact on Message Volume Growth: A Tipping Point?

The COVID-19 pandemic has changed the way people interact and collaborate. Structural shifts in behavior are a permanent new-normal for many, including the use of online meeting tools such as Zoom, Slack and Microsoft Teams. Technology has enabled people to stay connected, collaborate and share ideas despite widespread work from home protocols and other social distancing measures.

Investment-focused online platforms have seen a meaningful increase in their user base and engagement in the current environment. As people increasingly look to collaborate in online environments, the amount of investment-related conversation has significantly expanded, more than doubling from pre-pandemic levels. A wide community of individuals now regularly share their views on stocks with remarkable breadth and diversity within the community.

**Social Platform Message Volume Growth: COVID-19 Impact**
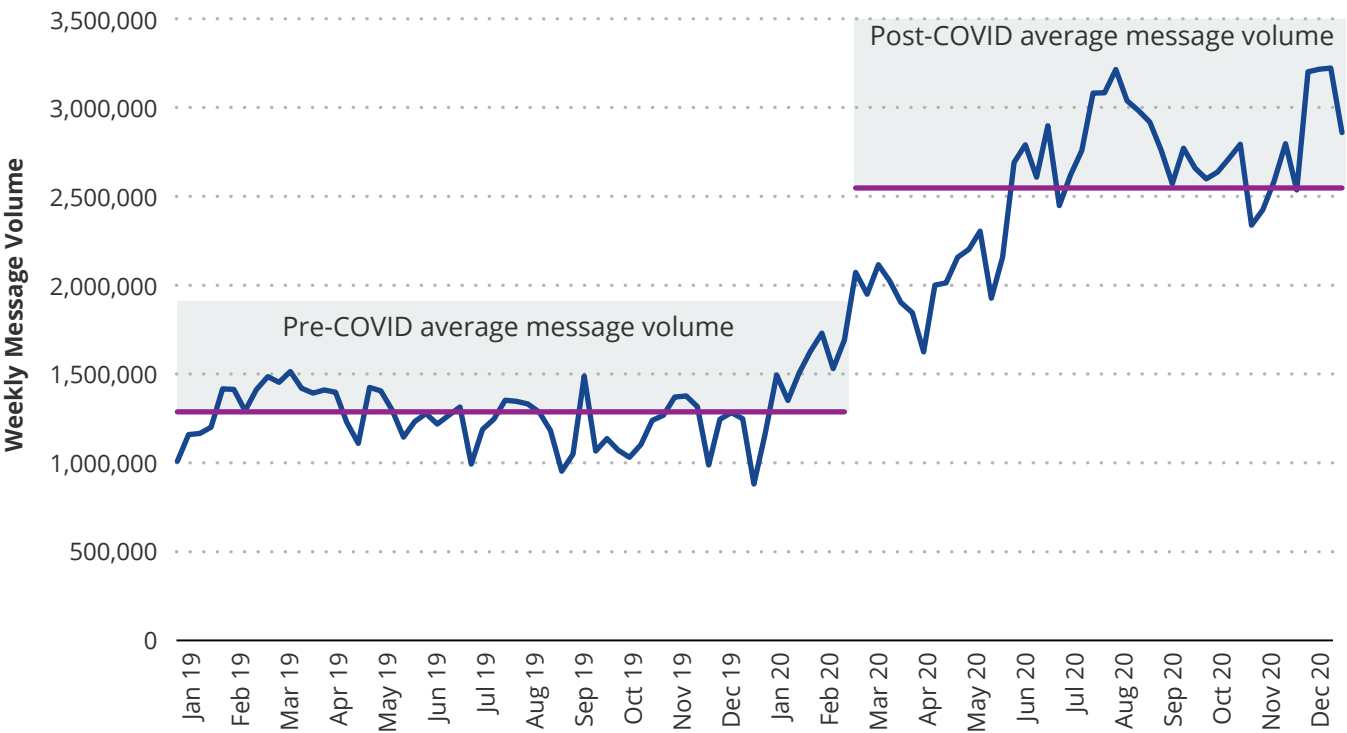


Source: Buzz Holdings ULC

The COVID-19 pandemic accelerated the growing movement towards online collaboration relating to stock discussion. The heightened adoption of social platforms over the past year has proven to be a new baseline of the volume of discussion. User activity and message volume continues to grow despite relaxed lockdown

provisions and many parts of the economy returning to work. The value add of stock-specific social platforms has been recognized by millions of new users to the ecosystem, who remain engaged through heightened use of mobile platform applications, which facilitate continued engagement.

### Extracting Sentiment from the Millions of Conversations

Big data analysis can yield a wealth of knowledge that can be used to track, explain, and potentially predict, the big picture. Processing and making sense of big data is beyond what any individual could analyze on their own. Advances in artificial intelligence (AI) allows for a deeper understanding of vast amounts of data, specifically data from the ever-growing social media landscape.

Natural Language Processing (NLP) is the branch of computer science that deals with the interpretation, meaning, classification and sentiment analysis of text. Advances in NLP allow for more accurate sentiment analysis than ever before. Moving beyond traditional keyword searches, NLP today has evolved to provide individuals insights regarding the contextual meaning of datasets.

AI and NLP have come together to allow for greater accuracy in scoring sentiment readings relating to individual posts. Specifically trained NLP models, using feature-based and machine learning approaches, can be assembled to yield highly accurate results. Domain specific model development is essential to accomplish this task, as individuals use unique language (and emojis) when they discuss stocks as opposed to conversations relating to consumer or social experiences. AI together with advances in NLP allows for models to achieve years of investment-related "experience" before applying that knowledge set to post-level sentiment scoring.



## Powerful Technologies Can Unlock Insights from Big Data

### Sentiment Insights and the Potential for Alpha Generation Within a Portfolio

To be eligible for potential inclusion in the BUZZ NextGen AI U.S. Sentiment Leaders Index ("BUZZ"), a stock must be an operating company listed on a major U.S. exchange and meet some key criteria:

**1.** Have a minimum market capitalization of USD $5 billion.

**2.** Have a 3-month minimum average daily trading volume of at least $1 million.

**3.** Meet a minimum mentions threshold, defined as investment-related posts from relevant online sources that are classified as relevant for analysis. This is based on a proprietary scoring methodology and incorporates a review of message volume data from a rolling four quarter period. The list of eligible stocks is determined at the beginning of each quarter.

At the monthly index selection date, each stock in the eligible universe receives a BUZZ score, which is the output from the models relating to the stock's aggregate sentiment levels. The universe is sorted from highest score to lowest, with the top 75 stocks (subject to a buffer rule for stocks 71-75) included in the index. Stocks within the index are weighted by their relative sentiment strength, with no constituent achieving a weighting greater than 3% within the index.
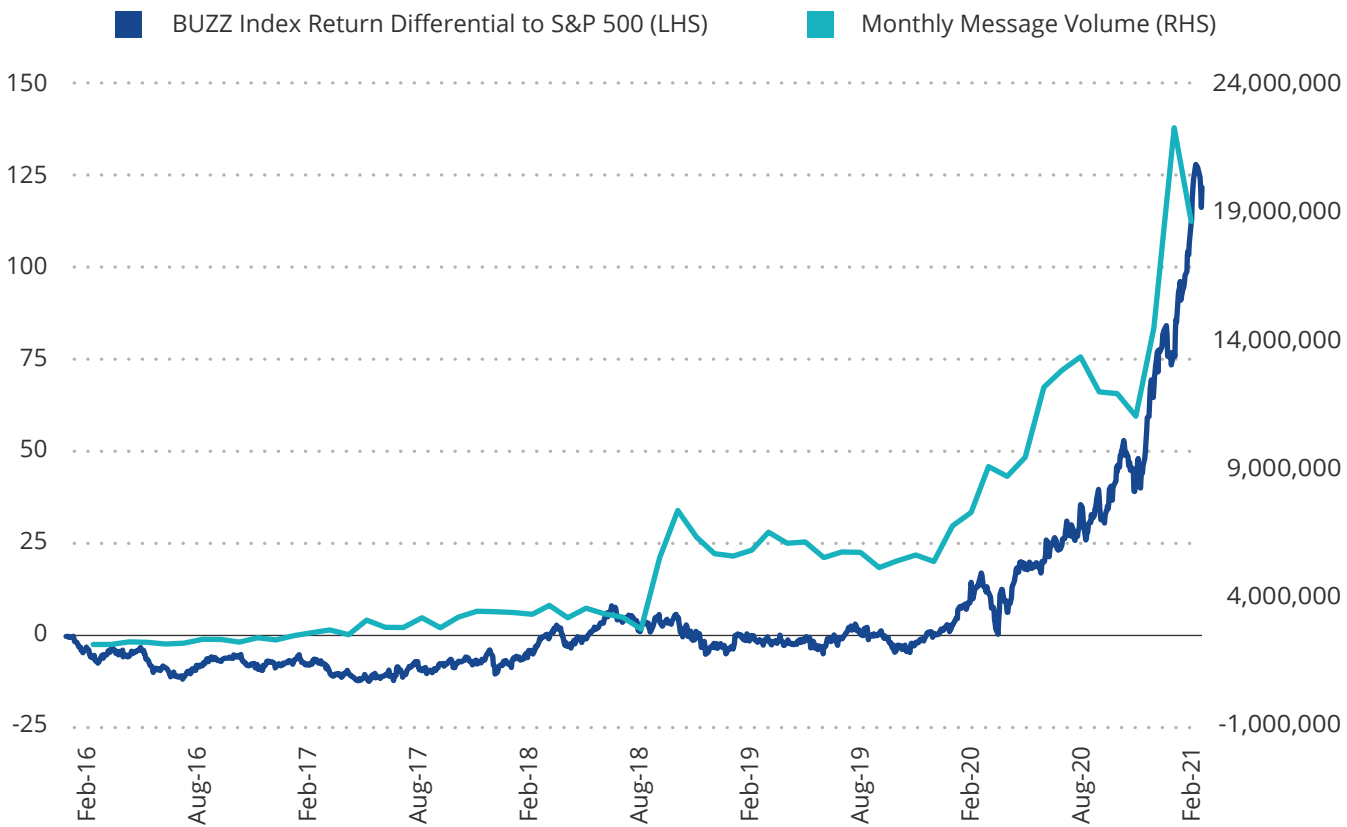
**BUZZ US Sentiment Leaders Index vs. S&P 500 Index
(Total Return Since Index Launch)**



Source: Buzz Holdings ULC

**BUZZ US Sentiment Leaders Index Outperformance vs. S&P 500 Relative to Message Volume Growth**



Source: Buzz Holdings ULC

As message volume has increased, BUZZ has a wider scope from which to draw insight. There is a strong correlation of rising outperformance to the broader large cap equity market as message volume has increased.

Online discussion ranges across a multitude of investment styles. Whether growth or value focused, momentum driven or contrarian, short-term or long-term, the discussion is wide ranging. BUZZ identifies the highest conviction stocks from the broad discussion.
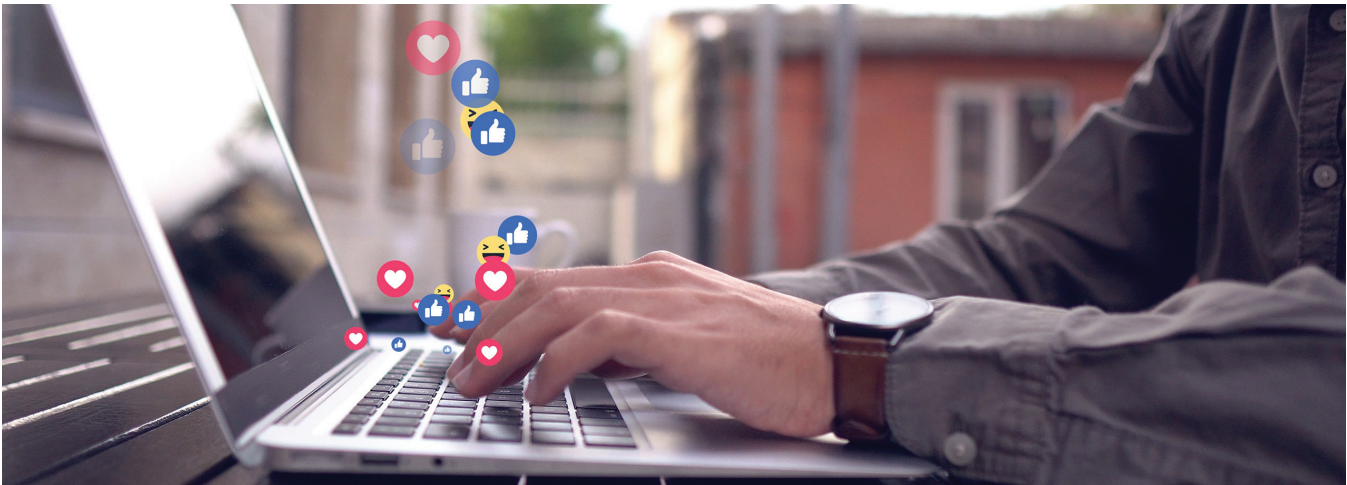
## The Value Proposition of Sentiment

### Theme Identification

Sustainability, cloud computing, technology components, application software and more

### Adaptive

176 unique stocks selected within the index during 2020. BUZZ quickly recognized winners/losers post COVID-19

### Contrarian / Value

Collective insight relating to anti-momentum / value stocks

## How Does BUZZ Fit Into A Portfolio?

### Sentiment momentum vs price momentum

A unique factor to provide uncorrelated returns

### Dynamic

Stock selection will dynamically shift with the BUZZ; sector allocations are a by-product with no constraints

### Alpha strategy

A great alternative to traditional large-cap U.S. equity funds

### Innovative

Access the same leading edge investment insights developed by the world's most sophisticated investors

## Top Contributors to 2020 Performance for the BUZZ NextGen AI U.S. Sentiment Leaders Index

1. Tesla Inc.
2. Roku Inc.
3. Advanced Micro Devices Inc.
4. NVIDIA Corp.
5. Square Inc.
6. Peloton Interactive Inc.
7. Plug Power Inc.
8. Amazon.com Inc.
9. Apple Inc.
10. Etsy Inc.
11. Twitter Inc.
12. Carnival Corp.
13. DocuSign Inc.
14. Enphase Energy Inc.
15. Crowdstrike Holdings Inc.
16. Boeing Co/The
17. Shopify Inc.
18. Snap Inc.
19. Facebook Inc.
20. Microsoft Corp.
21. Trade Desk Inc./The
22. Electronic Arts Inc.
23. Fastly Inc.
24. Zoom Video Communications Inc.
25. Zscaler Inc.

## Appendix

The following is a sample of available research within the field:

1. "Twitter mood predicts the stock market" – Bollen, Mao, and Zeng (2011).

2. "Predicting Stock Market Indicators Through Twitter" – Zhang, Fuehres and Gloor (2011).

3. "Twitter and Stock Returns" – Forbergskog and Blom (2013).

4. "Generating Abnormal Returns Using Crowdsourced Earnings Forecasts from Estimize" – Drogen and Jha (2013).

5. "Web Sentiment Analysis for Revealing Public Opinions, Trends and Making Good Financial Decisions" – Bissattini and Christodoulou (2013).

6. "Trading on Twitter: The Financial Information Content of Emotion in Social Media" – Sul, Dennis, and Yuan (2014).

7. "Wisdom of Crowds: The Value of Stock Opinions Transmitted Through Social Media" – Chen, De, Yu, and Hwang (2014).

8. "The Value of Crowdsourcing: Evidence from Earnings Forecasts" – Bliss and Nikolic (2015).

9. "The Value of Crowdsourced Earnings Forecasts" – Jame, Johnston, Markov, and Wolfe (2015).

10. "Twitter Sentiment and IPO Performance: A Cross-Sectional Examination" – Liew and Wang (2015).

11. "Leveraging Social Media to Predict Continuation and Reversal in Asset Prices" – Houlihan and Creamer (2015).

12. "Identification of a Social Media Equity Factor Derived Directly from Tweet Sentiments" – Liew and Budavari (2015).

13. "Stock Return Predictability and Investor Sentiment: A High-Frequency Perspective" – Sun, Najand and Shen (2015).

14. "Structure in the Tweet Haystack: Uncovering the Link between Text-Based Sentiment Signals and Financial Markets" – Klussmann, Ebner & Konig (2015).

15. "Improving Prediction of Stock Market Indices by Analyzing the Psychological States of Twitter Users" – Porshnev. Redkin and Shevchenko (2015).

16. "The Effects of Twitter Sentiment on Stock Price Returns" – Ranco, Gabriele & Aleksovski, Darko & Caldarelli, Guido & Grčar, Miha & Mozetič, Igor. (2015).

17. "Do Tweet Sentiments Still Predict the Stock Market?" – Kyung-Soo Liew and Budavari (2016).

18. "Can Sentiment Indicators Signal Market Reversals?" – Lagarde (2016).

19. "Tweet Sentiments and Stock Market: New Evidence from China" – Xu, Liu, Zhao and Su (2017).

20. "Twitter as a tool for forecasting stock market movements: A short-window event study" – Tahir M. Nisar, Man Yeung (2018)

21. "Social Mood Impact on Financial Decision Making: A Study of Twitter Sentiment on Stock Index Volume" – Porras, Gustavo (2019)

22. "Buzzwords build momentum: Global financial Twitter sentiment and the aggregate stock market" – Author links open overlay Axel Groß-Klußmann, Stephan König, Markus Ebner (2019)

23. "Social-Media Sentiment, Portfolio Complexity, and Stock Returns" – Woon Sau Leung, Gabriel Wong, Woon K. Wong (2019)

24. "Informational Role of Social Media: Evidence from Twitter Sentiment" – Gu, Chen and Kurov, Alexander (2020)

25. "Inside the Mind of Investors During the COVID-19 Pandemic: Evidence from the StockTwits Data" – Hasan Fallahgoul (2020)

## Important Definitions and Disclosures

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