

November 2021

US Market Structure Monthly

US Market Microstructure Observations

- The average daily volume in US equities was 11.1B shares in November 2021, up 6.7% month over month (MoM) while down 1.8% year over year.
- Trade reporting facility (TRF) market share decreased 0.9% MoM to 43.3%.
- Excluding the first and last half hour of the day, median spreads widened 9.3% and 12.3% MoM for S&P 500 and RUS 2000 symbols, respectively.
- Contrary to the trends in spreads, intraday volatility decreased 3.8% MoM for S&P 500 symbols while remained unchanged for RUS 2000 symbols.
- The proportion of volume traded in the closing auction for RUS 2000 symbols decreased from 10.1% to 8.8%.

Market Structure News

SEC Proposes More Disclosures for Stock Lending

The SEC proposed a new rule to require firms that lend securities to report data on each loan within 15 minutes of making the loan. Currently, there's little public information about volumes and rates in the securities-lending market, which enables short selling by allowing traders to borrow shares and buy back later.

<https://www.wsj.com/articles/in-post-gamestop-reform-push-sec-seeks-more-disclosure-of-stock-lending-11637285122>

SEC Approves Rules to Provide a Pathway to Ban Foreign Companies from US Exchanges

The SEC approved a rule that would enable banning of foreign companies from US exchanges if their auditors haven't been inspected by American regulators, effectively putting in place a framework to investigate auditing firms in jurisdictions such as China and Hong Kong.

<https://www.wsj.com/articles/sec-clears-a-path-to-banning-foreign-companies-from-u-s-exchanges-11636152942>

Exchanges to Start Cloud Migration

Alphabet Inc.'s Google has invested \$1 billion in CME group, and struck a deal to move the company's system to the cloud. Cloud transition is planned to start with data and clearing services, and eventually the entire trading systems. Similarly, Nasdaq announced a phased migration to Amazon Web Services starting in 2022 with MRX, a US options market.

<https://www.wsj.com/articles/google-invests-1-billion-in-exchange-giant-cme-strikes-cloud-deal-11636029900>

<https://www.wsj.com/articles/nasdaq-to-move-markets-to-amazons-cloud-11638291103>

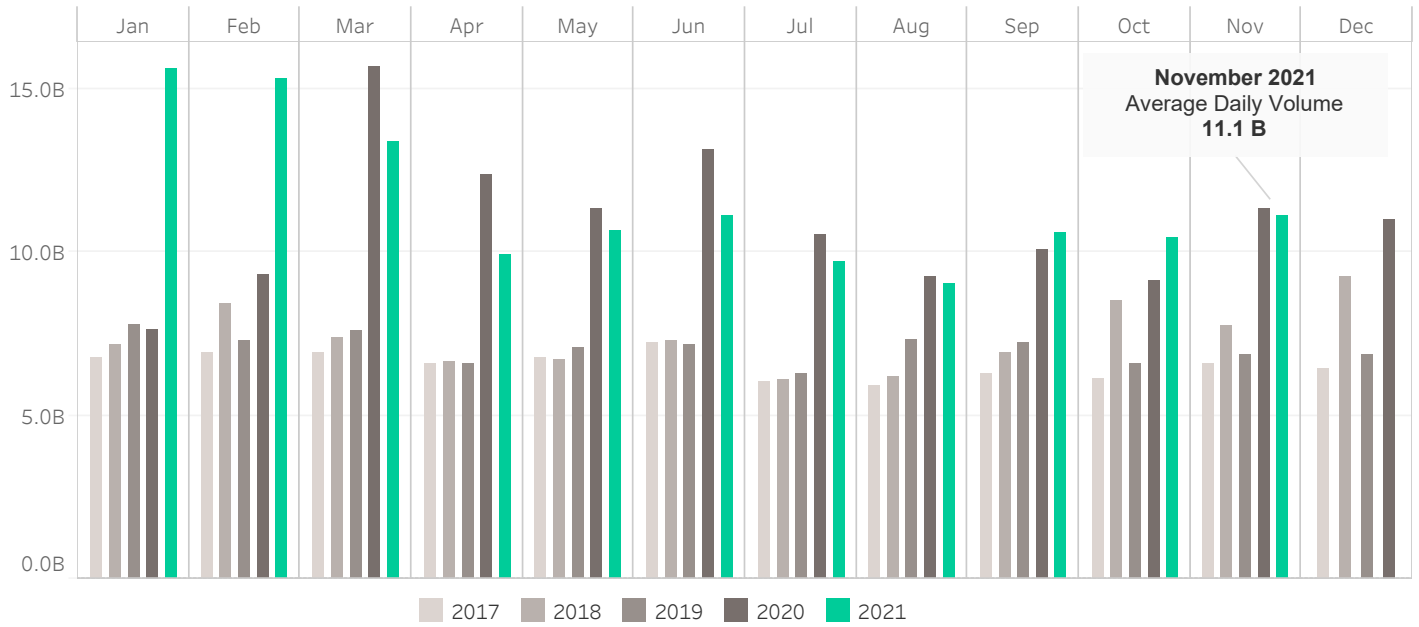
MEMX asked SEC to Disapprove Amendments to US Equity Data Fees

In a comment letter, MEMX asked SEC to disapprove the proposed amendments to the securities information processor (SIP) data. The letter highlighted that the proposed fees are generally more expensive than the fees charged for comparable market data available on proprietary data feeds, which would serve to protect the proprietary data products from needed competition.

(Disclosure: Virtu has a minority ownership stake in MEMX).

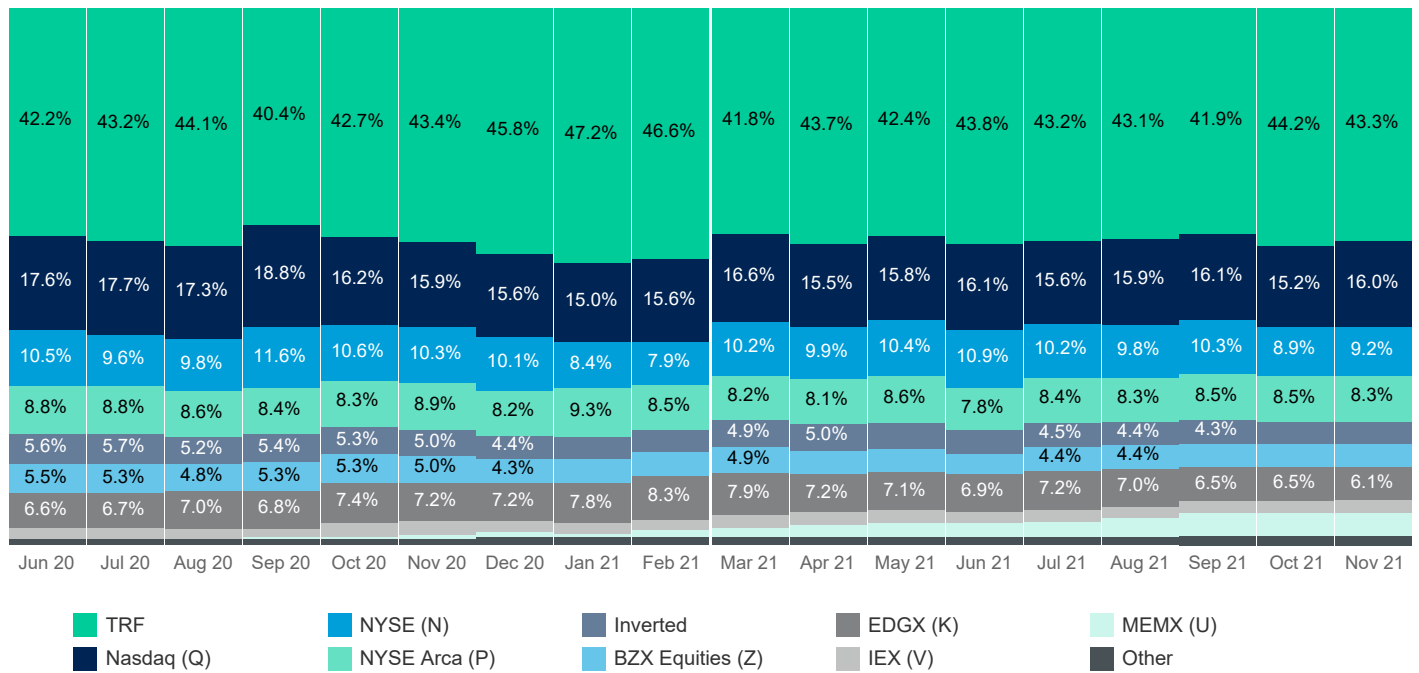
<https://memx.com/the-cure-for-the-industrys-market-data-woes-isnt-more-costly-sip-data/>

Average Daily Market Volume



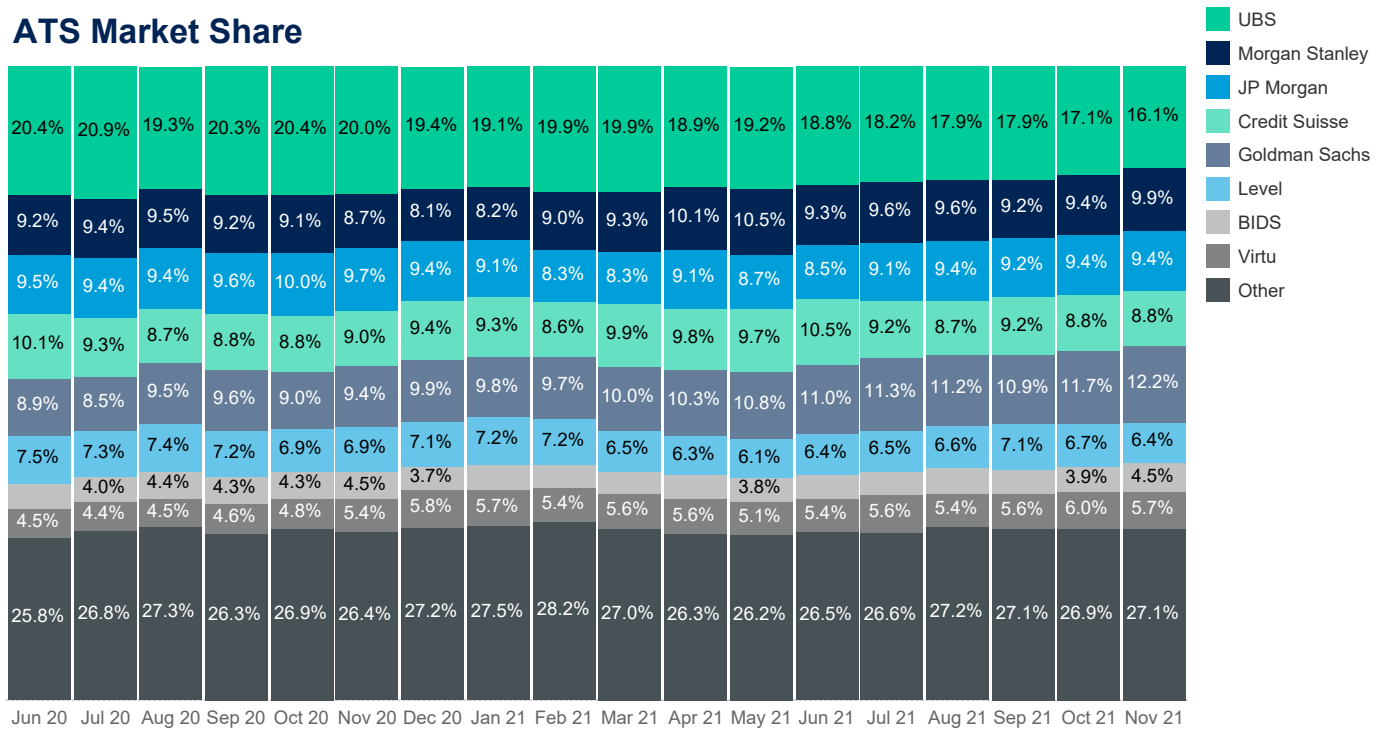
Source data: Cboe Global Markets

Venue Market Share



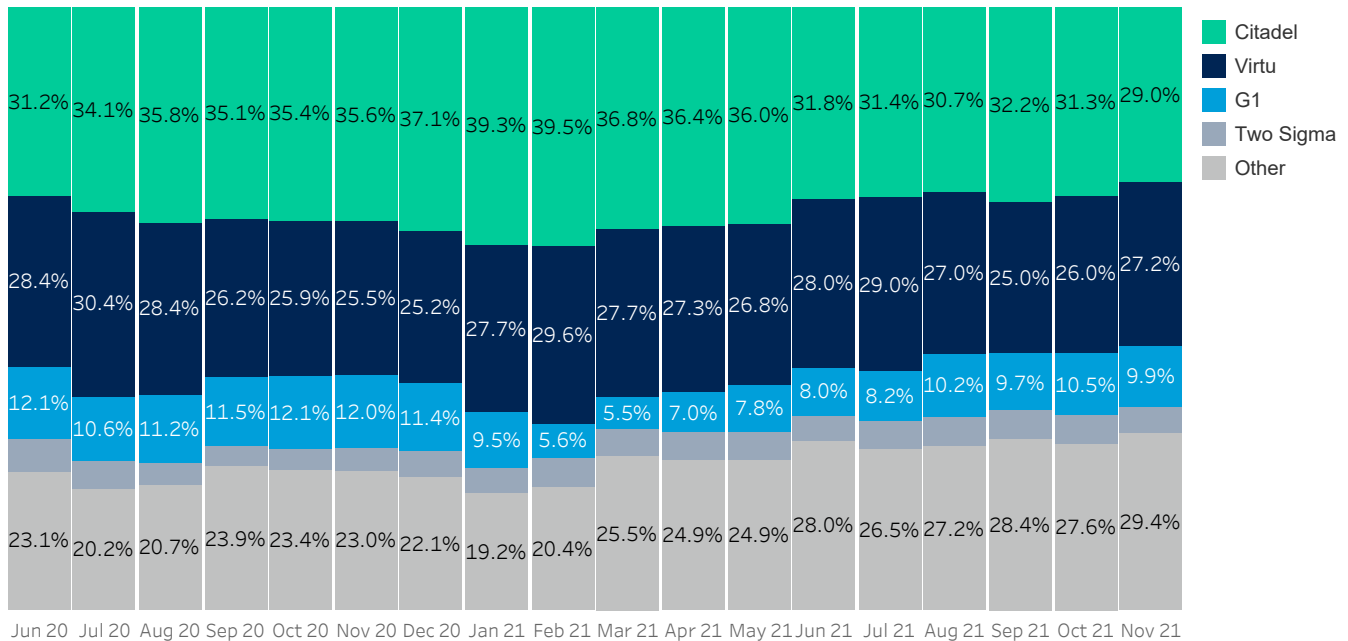
Source data: Cboe Global Markets

ATS Market Share



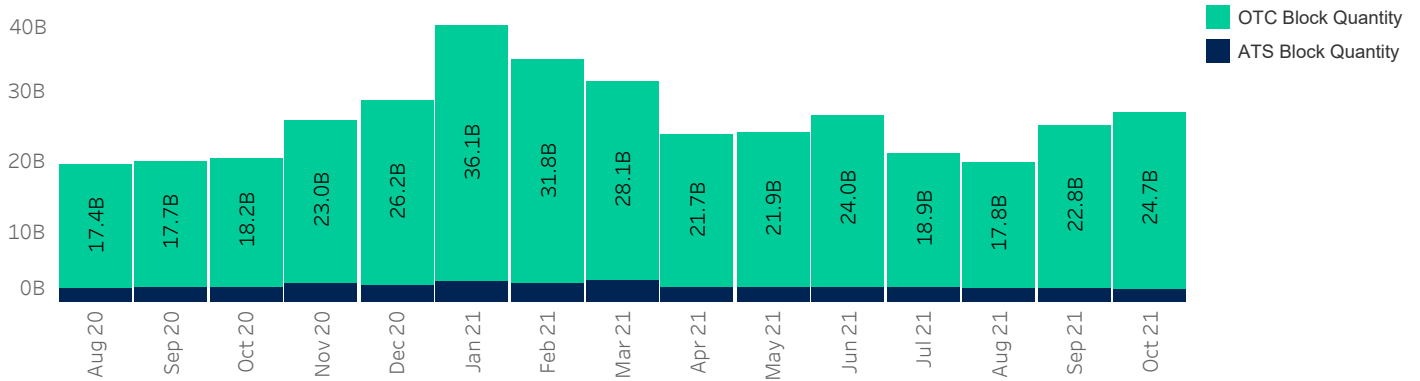
Excludes Dealerweb, OTC; Venues rolled up to firm level; Source data: FINRA

OTC Non-ATS Market Share



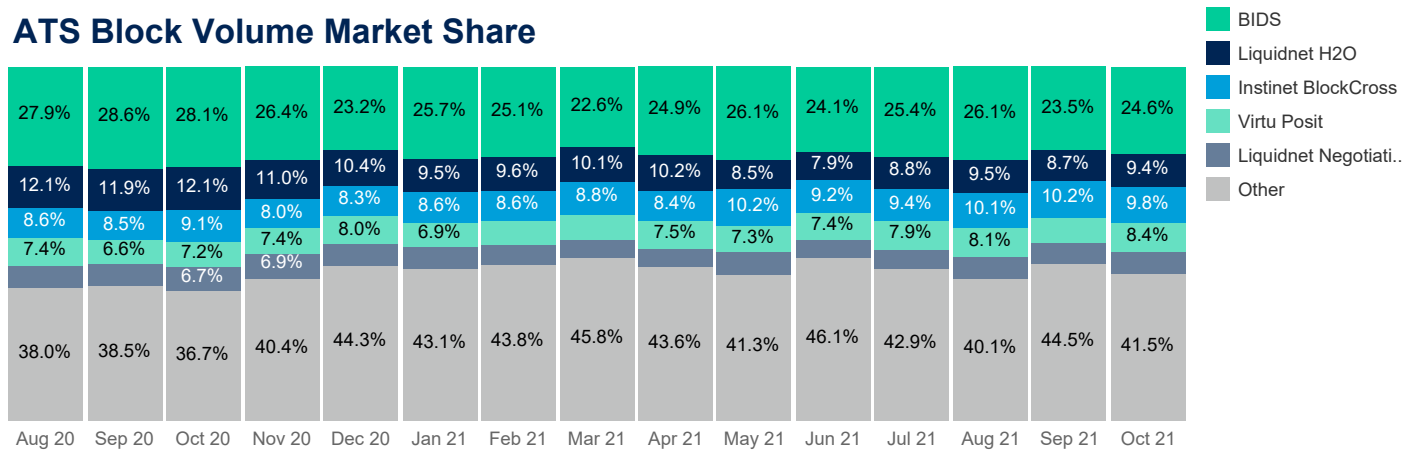
Source: FINRA, NMS Tier 1 & 2 Securities

TRF Block Volume Breakdown (Shares)



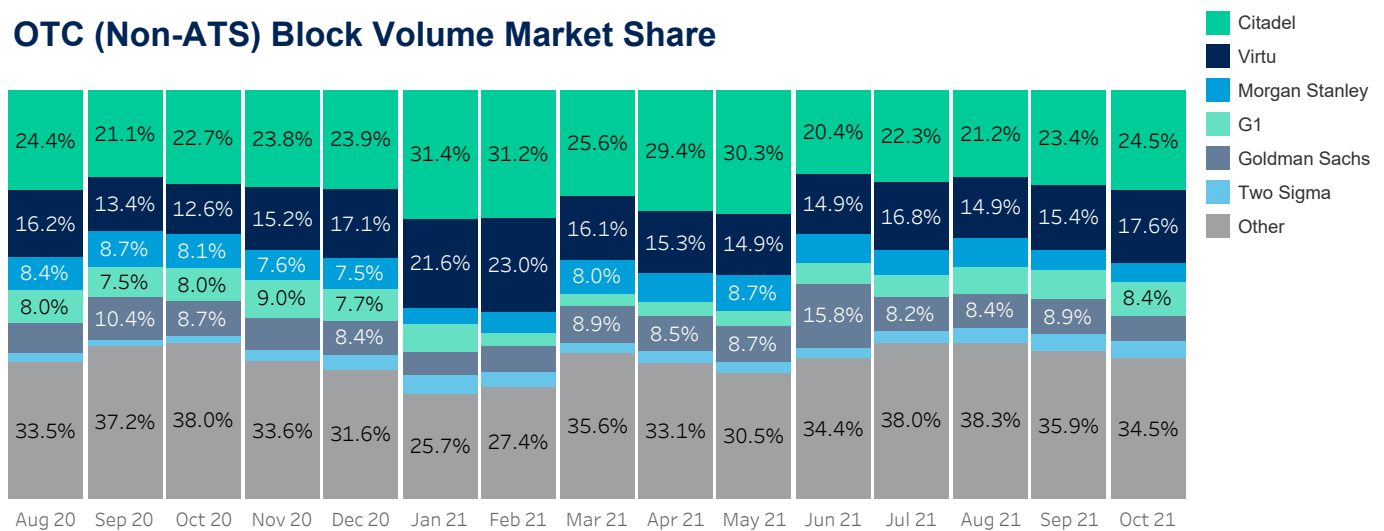
Source: FINRA

ATS Block Volume Market Share



Excludes Dealerweb; Blocks defined as >10K shares; Source data: FINRA

OTC (Non-ATS) Block Volume Market Share



Blocks defined as >10K shares; Source data: FINRA

Quotesize in Shares

| | | 4Q 20 | | 1Q 21 | | | 2Q 21 | | | 3Q 21 | | | 4Q 21 | |
|--------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | Nov 20 | Dec 20 | Jan 21 | Feb 21 | Mar 21 | Apr 21 | May 21 | Jun 21 | Jul 21 | Aug 21 | Sep 21 | Oct 21 | Nov 21 |
| First 30 Min | SP500 | 201 | 197 | 192 | 193 | 191 | 188 | 184 | 178 | 177 | 176 | 171 | 170 | 172 |
| | RUS2000 | 226 | 228 | 216 | 217 | 222 | 231 | 225 | 217 | 222 | 221 | 214 | 207 | 201 |
| Mid Day | SP500 | 206 | 206 | 201 | 204 | 195 | 198 | 193 | 197 | 190 | 193 | 184 | 181 | 183 |
| | RUS2000 | 236 | 232 | 223 | 220 | 207 | 216 | 211 | 213 | 210 | 215 | 208 | 205 | 209 |
| Last 30 Min | SP500 | 231 | 233 | 231 | 238 | 217 | 225 | 224 | 239 | 232 | 238 | 219 | 210 | 213 |
| | RUS2000 | 263 | 260 | 250 | 255 | 225 | 238 | 235 | 243 | 240 | 249 | 236 | 232 | 238 |

Spread Bps

| | | | | | | | | | | | | | | |
|--------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| First 30 Min | SP500 | 14.7 | 12.4 | 13.2 | 13.6 | 13.2 | 10.3 | 10.2 | 8.1 | 9.7 | 9.9 | 9.3 | 11.1 | 12.3 |
| | RUS2000 | 67.2 | 60.3 | 63.2 | 61.8 | 67.0 | 57.7 | 56.8 | 45.0 | 52.7 | 51.5 | 45.7 | 47.3 | 50.2 |
| Mid Day | SP500 | 6.5 | 5.4 | 5.7 | 5.3 | 5.6 | 4.4 | 4.3 | 3.5 | 4.1 | 4.0 | 4.1 | 4.3 | 4.7 |
| | RUS2000 | 26.9 | 24.6 | 26.8 | 25.5 | 27.7 | 23.1 | 22.6 | 18.0 | 19.9 | 18.8 | 18.2 | 18.7 | 21.0 |
| Last 30 Min | SP500 | 4.5 | 3.8 | 3.7 | 3.6 | 3.8 | 3.1 | 3.1 | 2.6 | 2.9 | 2.7 | 2.8 | 3.0 | 3.1 |
| | RUS2000 | 21.2 | 19.1 | 19.7 | 19.3 | 20.8 | 17.5 | 16.9 | 14.1 | 14.4 | 14.2 | 14.3 | 14.8 | 15.6 |

One Minute Volatility Bps

| | | | | | | | | | | | | | | |
|--------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| First 30 Min | SP500 | 20.2 | 15.3 | 17.5 | 18.7 | 18.8 | 14.5 | 16.4 | 12.8 | 14.5 | 14.2 | 14.8 | 15.3 | 15.9 |
| | RUS2000 | 20.9 | 16.5 | 20.7 | 22.1 | 25.8 | 18.4 | 21.6 | 15.9 | 19.3 | 18.8 | 18.6 | 17.7 | 18.9 |
| Mid Day | SP500 | 7.7 | 5.8 | 6.9 | 6.7 | 7.9 | 5.4 | 6.1 | 4.5 | 5.3 | 4.8 | 5.4 | 5.2 | 5.0 |
| | RUS2000 | 6.3 | 5.3 | 6.6 | 6.9 | 9.3 | 5.9 | 6.5 | 4.9 | 6.2 | 5.3 | 5.7 | 5.2 | 5.2 |
| Last 30 Min | SP500 | 8.9 | 6.8 | 7.6 | 7.3 | 8.8 | 6.2 | 7.1 | 5.2 | 5.7 | 5.3 | 6.2 | 6.1 | 5.5 |
| | RUS2000 | 8.8 | 7.4 | 8.7 | 8.7 | 11.8 | 7.5 | 8.6 | 6.5 | 7.2 | 6.6 | 7.7 | 7.2 | 7.3 |

Percent ADV by Time of Day

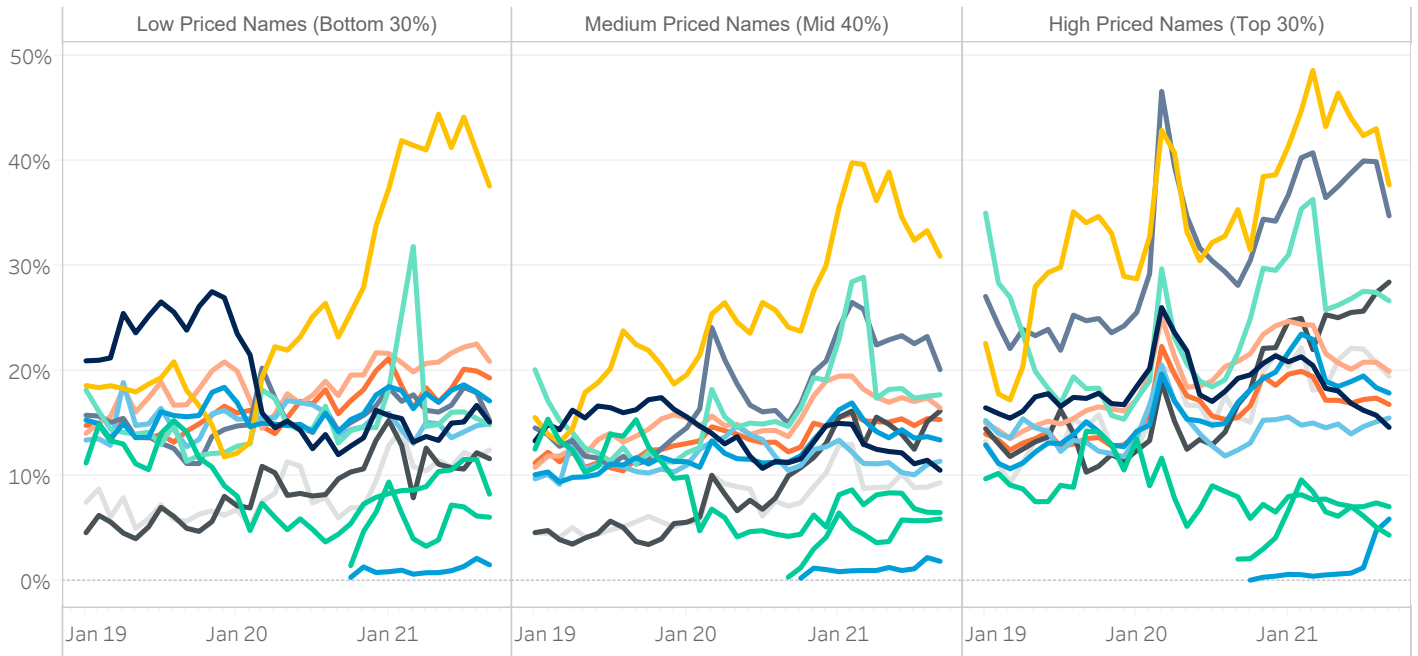
| | | | | | | | | | | | | | | |
|--------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Open | SP500 | 1.1% | 1.1% | 1.3% | 1.2% | 1.1% | 1.3% | 1.2% | 1.1% | 1.2% | 1.1% | 1.0% | 1.1% | 1.1% |
| | RUS2000 | 0.9% | 0.8% | 0.9% | 1.0% | 0.9% | 0.9% | 0.9% | 0.8% | 1.0% | 0.9% | 0.9% | 0.9% | 0.9% |
| First 30 Min | SP500 | 10.3% | 9.5% | 9.6% | 10.1% | 9.2% | 9.6% | 9.7% | 9.5% | 10.0% | 9.7% | 9.7% | 9.5% | 9.7% |
| | RUS2000 | 8.4% | 7.8% | 8.1% | 8.7% | 8.4% | 8.1% | 8.4% | 7.9% | 8.9% | 8.8% | 8.5% | 8.3% | 8.5% |
| Last 30 Min | SP500 | 17.4% | 17.4% | 16.9% | 17.2% | 17.6% | 17.8% | 18.4% | 18.5% | 18.3% | 18.3% | 18.2% | 18.8% | 18.3% |
| | RUS2000 | 18.8% | 19.0% | 18.5% | 18.6% | 18.6% | 19.3% | 19.3% | 19.4% | 19.8% | 19.5% | 19.6% | 19.1% | 19.4% |
| Close | SP500 | 10.7% | 13.7% | 12.0% | 10.6% | 11.9% | 13.2% | 11.1% | 12.3% | 12.5% | 10.7% | 11.7% | 12.1% | 11.5% |
| | RUS2000 | 9.9% | 10.6% | 10.0% | 8.3% | 9.2% | 9.5% | 8.7% | 10.0% | 9.9% | 8.9% | 9.7% | 10.1% | 8.8% |

Median used for all metrics

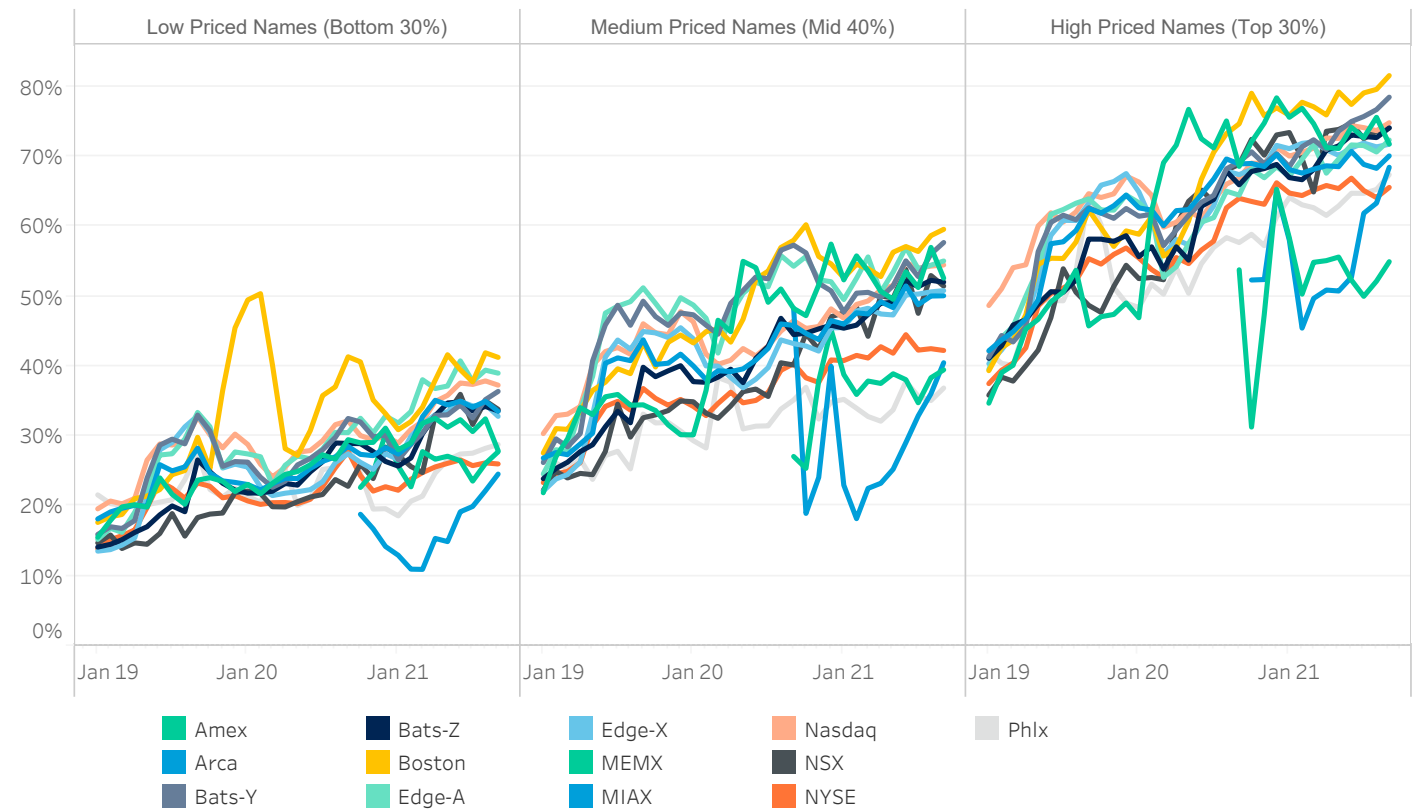
One minute volatility is calculated using the difference between the high and low price within a one minute time bin, divided by that bin's VWAP

Source data: Virtu Financial

Hidden Trades Proportion by Price and Venue



Oddlot Trades Proportion by Price and Venue



Source data: SEC

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