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## Second Quarter 2021

- U.S. Equity ([E/M Summary Report](#))
  - SCERS' total trading cost was +2.81 cents per share (cps)<sup>2</sup>, which was 0.94 cps lower than the E/M benchmark costs of +3.75 cps.
  - SCERS' U.S. equity managers outperformed on both commissions (+0.97 cps) and market impact (+1.84 cps) versus the benchmark costs of +1.53 cps and +2.22 cps, respectively.
  - As measured in basis points (bp), SCERS' total trading cost was +3.99 bp, which was 1.33 bp lower than the E/M benchmark costs of +5.32 bp.
  - Based on 4.6 million shares traded during the quarter (\$322 million principal), SCERS' U.S. equity managers produced savings of approximately \$43,000 compared to E/M benchmark costs.
  - For the first time, trading cost analysis during the second quarter includes small cap manager Snyder Capital, which was hired by SCERS in the first quarter of 2021. During the quarter, Snyder outperformed the E/M benchmarks, with lower commission and market impact costs compared to E/M benchmark averages. SCERS will continue to monitor Snyder's trading costs, along with SCERS' other equity managers.
  
- Global Equity ([E/M Summary Report](#))
  - SCERS' total global equity trading costs were +9.89 basis points (bp), 8.86 basis points lower than the E/M benchmark costs of +18.75 bp.
  - SCERS' commission costs (+6.85 bp) were significantly lower than benchmark costs (+14.69 bp), resulting in the majority of cost savings versus the E/M benchmark.
  - Costs for fees (+2.53 bp) were slightly above the benchmark (+2.18), while market impact (+0.68) was less than the benchmark cost (+1.88), as measured by full day VWAP.
  - Total principal traded was \$108.2 million across 17 countries, resulting in a savings of approximately \$96,000 compared to E/M benchmark costs.
  - No manager specific issues were noted, with all managers delivering cost savings versus E/M benchmarks over the past several quarters.
  
- U.S. Fixed Income ([E/M Summary Report](#))
  - SCERS' U.S. Fixed Income trade costs were +0.07 basis points during the quarter, significantly below the E/M benchmark costs of +12.30 bp.
  - Total trade volume was approximately \$1.14 billion in principal, with 773 trades executed across 156 different securities.
  - The trade costs versus the benchmark represented a savings of approximately \$1.4 million versus average benchmark costs.
  - Trade costs were lower than the benchmark across most security types, with significant savings generated in trading of government, mortgage, and corporate

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<sup>2</sup> Transaction Cost Analysis (TCA) is presented in either cents per share (cps) or basis points (bp). Cents per share is typically used for U.S. Equity analysis, while basis points is used across other asset classes. Cents per share is the cost for executing transactions on a per share basis, while basis points represent costs based on principal amount traded, with 1 basis point equal to 1/100<sup>th</sup> of one percent.

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- bonds. Agency bonds were the only security type where costs were above benchmark, but this had minimal impact, as only one trade was executed for less than \$1 million in principal.
- No manager specific issues were noted, with all managers delivering cost savings versus E/M benchmarks over the past several quarters.
  - Global Fixed Income ([E/M Summary Report](#))
    - SCERS' Global Fixed Income trade costs were +0.07 bp, which was 5.85 bp lower than the benchmark costs of +5.92 bp.
    - Trade volume during the quarter was approximately \$59 million, with 157 trades executed across 66 different securities.
    - Trade costs of 5.85 bp below the benchmark resulted in cost savings of approximately \$35,000 compared to average benchmark costs.
    - SCERS' global fixed income manager (Prudential) has typically delivered significant cost savings versus the E/M benchmark, with only one quarter over the past year where costs were higher than the E/M benchmark. No concerns are noted at this time.
  - Commission Recapture
    - For the second quarter 2021, SCERS received a rebate of \$3,483, which represents approximately 52% of the commissions generated during the quarter.
    - Year to date through June 2021, SCERS received a rebate of \$4,513, which was 53% of the commissions generated through the commission recapture program.
    - Total commissions and the rebate returned back to SCERS continues to decline due to lower commission rates and changing market dynamics.

Staff has received and reviewed the full reports from Elkins/McSherry. The summary reports attached include key pages from these reports. The full reports are available upon request.

As noted in the recent Board education presentation, Staff is currently in process of evaluating TCA service providers. Any change to service providers may affect future Board reporting, including evaluation of managers and reports available for analysis. Staff will follow up with additional details on the evaluation of the service providers over the next several months.

## **ATTACHMENTS**

- Board Order
- Elkins / McSherry Trading Cost Summary reports for the quarter ending June 30, 2021, for U.S. equity, international equity, U.S. fixed income, and global fixed income.

Prepared by:

***/S/***

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Brian Miller  
Senior Investment Officer

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Reviewed by:

***/S/***

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Steve Davis  
Chief Investment Officer

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Eric Stern  
Chief Executive Officer



# Retirement Board Order

## Sacramento County Employees' Retirement System

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**Before the Board of Retirement  
September 15, 2021**

MOTION:

**Trading Cost Analysis Report – Second Quarter 2021**

THE BOARD OF RETIREMENT hereby accepts the recommendation of staff to receive and file the Trading Cost Analysis Report – Second Quarter 2021.

I HEREBY CERTIFY that the above order was passed and adopted on September 15, 2021 by the following vote of the Board of Retirement, to wit:

AYES:

NOES:

ABSENT:

ABSTAIN:

ALTERNATES (Present but not voting):

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Richard B. Fowler II  
Board President

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Eric Stern  
Chief Executive Officer and  
Board Secretary



## SACRAMENTO COUNTY

Trade Cost Summary - U.S. Equity Trading

Period End June 30, 2021





(+) = Cost

**EXECUTIVE SUMMARY**

Elkins/McSherry has been providing trading cost analysis to institutional investors since 1991, serving many of the worlds largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an un-matched collection of global equity market and Universe data, Elkins/McSherry has produced a Trading Cost Analysis on behalf of SACRAMENTO COUNTY. This study evaluates U.S. equity executions from April 1 , 2021 to June 30, 2021. The analysis included trading of 4,562,592 shares representing \$321.91 million in principal.

Methodology :

The Elkins/McSherry analysis measures trading efficiency by quantifying the cost of brokerage commission and execution quality versus a Full Day VWAP benchmark for each of the securities traded. These data have been aggregated to summarize results by Buy/Sell, Commissions, Market Impact, Short Term Alpha, Market Cap, Trade Difficulty and Trade Detail. These results are quantified in USD as well as being displayed graphically to highlight the outcomes.

Results :

**BENCHMARK PERFORMANCE**

| Commission   | Full Day VWAP   | E - Score  |
|--|---|--|
| <ul style="list-style-type: none"> <li>Your commission cost was +0.97 cps (+1.38 bp) or +\$44,270 (0.56 cps (0.79 bp) better than the Elkins/McSherry All Trading Universe)</li> </ul> | <ul style="list-style-type: none"> <li>Your market impact cost was +1.84 cps (+2.61 bp) or 0.38 cps (0.54 bp) better than the Elkins/McSherry Universe</li> <li>Your overall trading cost of +2.81 cps (+3.98 bp) was 0.94 cps (1.33 bp) better than the Elkins/McSherry Universe</li> <li>Full Day VWAP Universe Rank: 53%</li> <li>Total Cost Universe Rank: 62%</li> </ul> | <ul style="list-style-type: none"> <li>E-Score : 0.02</li> </ul> |

**ELKINS/MCSHERRY UNIVERSE VALUES**

| Commission (cps) |             |                |         | Market Impact (cps) |               |
|------------------|-------------|----------------|---------|---------------------|---------------|
| Bundled          | All Trading | Execution Only | Program |                     | Full Day VWAP |
| +3.44            | +1.53       | +1.24          | +1.62   | Median              | +2.22         |
|                  |             |                |         | 75 %                | +0.05         |
|                  |             |                |         | 25 %                | +4.64         |



(+) = Cost

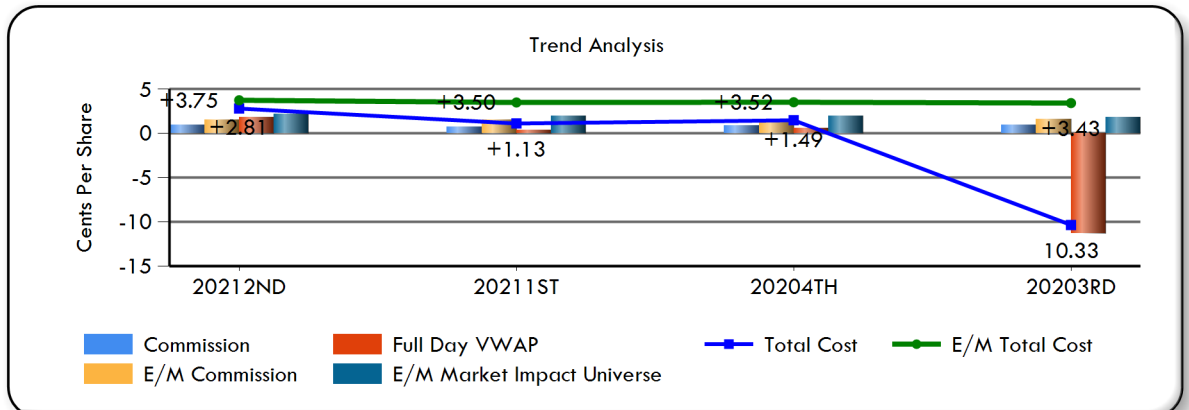
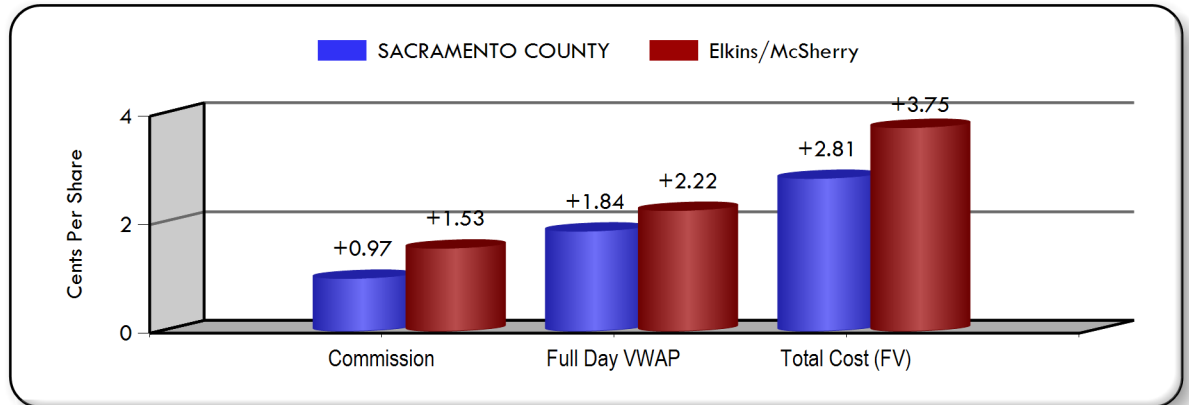
**EXECUTIVE SUMMARY**

**TOTAL PORTFOLIO COST PERFORMANCE**

| Side  | COMMISSION                    |                               |                           | MARKET IMPACT          |                                 | Total Cost | Total Cost/Savings Vs. Universe    | E -Score |
|-------|-------------------------------|-------------------------------|---------------------------|------------------------|---------------------------------|------------|------------------------------------|----------|
|       | Your Avg. Commission<br>(cps) | All Trading Universe<br>(cps) | Bundled Universe<br>(cps) | Full Day VWAP<br>(cps) | Universe Full Day VWAP<br>(cps) | (cps)      | Commission+ Full Day VWAP<br>(cps) |          |
| Sells | +0.96                         | +1.53                         | +3.44                     | +0.39                  | +2.22                           | +1.35      | 2.39                               | -0.04    |
| Buys  | +0.98                         | +1.53                         | +3.44                     | +3.40                  | +2.22                           | +4.38      | +0.64                              | 0.07     |
| Total | +0.97                         | +1.53                         | +3.44                     | +1.84                  | +2.22                           | +2.81      | 0.94                               | 0.02     |

**TRADING COMPONENTS**

|                                  | Buys        | Sells       |
|----------------------------------|-------------|-------------|
| Trade Principal                  | 162,155,147 | 159,756,842 |
| Shares                           | 2,194,569   | 2,368,023   |
| Unique Names                     | 578         | 676         |
| Liquidity (% ADV)                | 0.035       | 0.028       |
| Avg. Execution Size              | 1,849       | 1,780       |
| Avg. Order Completion Time (min) | N/A         | N/A         |
| Total Number of Trades           | 1,187       | 1,330       |





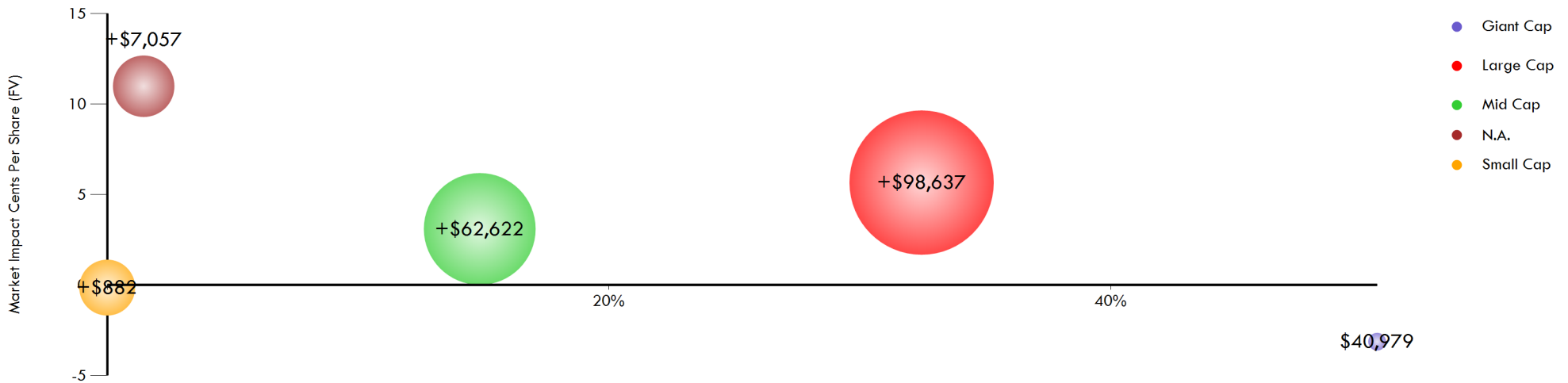
(+) = Cost

EXECUTIVE SUMMARY

MARKET CAPITALIZATION

| Market Cap | % Traded | Avg. Shares Per Order | COMMISSION      |                      | MARKET IMPACT |                        |                    | Total Cost | Total Cost/Savings                     | E - Score | Market Cap Definition |
|------------|----------|-----------------------|-----------------|----------------------|---------------|------------------------|--------------------|------------|--|-----------|-----------------------|
|            |          |                       | Your Commission | All Trading Universe | Full Day VWAP | Universe Full Day VWAP | Rank Full Day VWAP | (cps)      | Commission+ Full Day VWAP Vs. Universe |           |                       |
|            | (\$)     |                       | (cps)           | (cps)                | (cps)         | (cps)                  |                    | (cps)      |  |           |                       |
| Giant Cap  | 50.74 %  | 2,132                 | +0.60           | +1.53                | 3.14          | +3.67                  | 76 %               | 2.54       | 7.73                                   | -0.07     | Over \$25 B           |
| Large Cap  | 32.59 %  | 1,530                 | +0.66           | +1.53                | +5.66         | +2.26                  | 25 %               | +6.32      | +2.53                                  | 0.09      | \$5 B To \$25 B       |
| Mid Cap    | 14.97 %  | 1,817                 | +1.76           | +1.53                | +3.10         | +2.18                  | 39 %               | +4.85      | +1.15                                  | 0.11      | \$1 B To \$5 B        |
| N.A.       | 1.58 %   | 6,392                 | +1.28           | +1.53                | +10.99        | +2.22                  | 3 %                | +12.27     | +8.52                                  | 0.16      |                       |
| Small Cap  | 0.12 %   | 1,903                 | +2.25           | +1.53                | 0.15          | +0.93                  | 70 %               | +2.11      | 0.35                                   | -0.06     | \$250 M To \$1 B      |

Total Cost by Market Cap: (USD)





(+) = Cost

**TRADE CYCLE DETAIL**

**Manager Performance (Full Day VWAP)**

|                      |                            |                  |              |           | COMMISSION                 |                            | MARKET IMPACT       |                    | TOTAL COST/SAVIN GS                     | RANK TREND - Full Day VWAP |             |             |
|----------------------|----------------------------|------------------|--------------|-----------|----------------------------|----------------------------|---------------------|--------------------|---|----------------------------|-------------|-------------|
| Manager              | Principal Traded (USD/Mil) | Shares Per Order | Total Shares | E - Score | Your Avg. Commission (cps) | All Trading Universe (cps) | Full Day VWAP (cps) | Rank Full Day VWAP | Commission + Full Day VWAP Vs. Universe | 20211ST (%)                | 20204TH (%) | 20203RD (%) |
| AQR                  | 147                        | 2,622            | 2,084,619    | 0.02      | +0.07                      | +1.53                      | +0.64               | 70 %               | 3.03                                    | 50                         | 71          | 58          |
| ALLIANCE R 3000 CAPI | 65                         | 942              | 866,865      | -0.03     | +0.00                      | +1.53                      | +0.43               | 71 %               | 3.32                                    | 1                          | 99          | 99          |
| WEATHERBIE           | 50                         | 1,448            | 887,642      | 0.14      | +3.27                      | +1.53                      | +8.75               | 5 %                | +8.27                                   | 95                         | 19          | 18          |
| EAGLE CAPITAL MANAGE | 45                         | 8,447            | 380,116      | -0.07     | +2.55                      | +1.53                      | 4.48                | 87 %               | 5.68                                    | 99                         | 98          | 96          |
| SNYDER CAPITAL       | 15                         | 2,384            | 343,350      | 0.05      | +1.17                      | +1.53                      | +1.84               | 53 %               | 0.74                                    | -                          | -           | -           |

**ELKINS/MCSHERRY UNIVERSE VALUES**

| Commission (cps) |             |                |         | Market Impact (cps) |
|------------------|-------------|----------------|---------|---------------------|
| Bundled          | All Trading | Execution Only | Program | Full Day VWAP       |
| +3.44            | +1.53       | +1.24          | +1.62   | +2.22               |

**NOTES**

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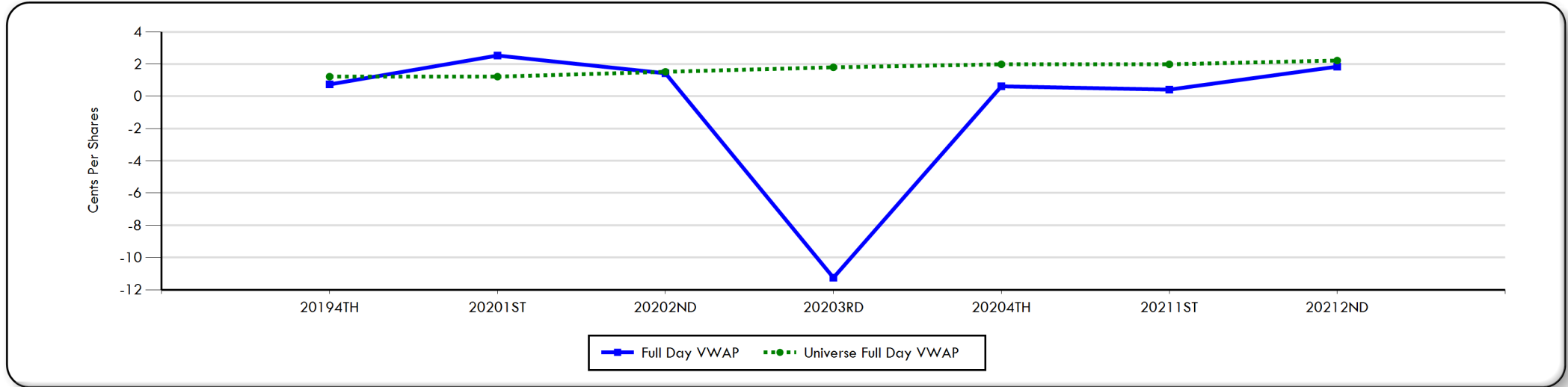


(+) = Cost

**TRADE HISTORY**

**Trade History**

| Period  | Total Shares | Total Dollars Traded | Commission |        | Full Day VWAP (cps) | Full Day VWAP Universe Rank (%) |
|---------|--------------|----------------------|------------|--------|---------------------|---------------------------------|
|         |              |                      | (cps)      | (\$)   |                     |                                 |
| 20194TH | 3,275,124    | 155,418,903          | +1.49      | 48,930 | +0.74               | 58                              |
| 20201ST | 4,059,692    | 198,207,205          | +1.57      | 63,827 | +2.53               | 33                              |
| 20202ND | 7,218,058    | 279,989,271          | +1.08      | 77,872 | +1.43               | 51                              |
| 20203RD | 6,287,580    | 365,734,518          | +0.93      | 58,162 | 11.26               | 99                              |
| 20204TH | 2,686,090    | 163,023,705          | +0.87      | 23,254 | +0.62               | 70                              |
| 20211ST | 3,135,094    | 202,043,603          | +0.71      | 22,268 | +0.42               | 71                              |
| 20212ND | 4,562,592    | 321,911,989          | +0.97      | 44,270 | +1.84               | 53                              |



**Note on Universes:**

Universes constructed of preferred securities are exclusive of fixed income transactions such as convertible bonds



## SACRAMENTO COUNTY

Trade Cost Summary - Global Equity Trading

Period End June 30, 2021





**(+) = Cost** **EXECUTIVE SUMMARY**

Elkins/McSherry has been providing trading cost analysis to institutional investors since 1991, serving many of the worlds largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an un-matched collection of global equity market and Universe data, Elkins/McSherry has produced a Trading Cost Analysis on behalf of SACRAMENTO COUNTY. This study evaluates global equity executions from April 1, 2021 to June 30, 2021. The analysis included trading of 6,113,179 shares representing \$108.16 million in principal across 17 countries.

Methodology :

The Elkins/McSherry analysis measures trading efficiency by quantifying the cost of brokerage commission, fees, and execution quality versus an Full Day VWAP benchmark for each of the securities traded. These data have been separated to summarize results, by Buy/Sell, Commissions, Market Impact, Short Term Alpha, Market Cap, Country, Trade Difficulty, and Highest and Lowest Cost Trades. These results are quantified in \$ and Basis Points (BP) as well as being displayed graphically to highlight the outcomes.

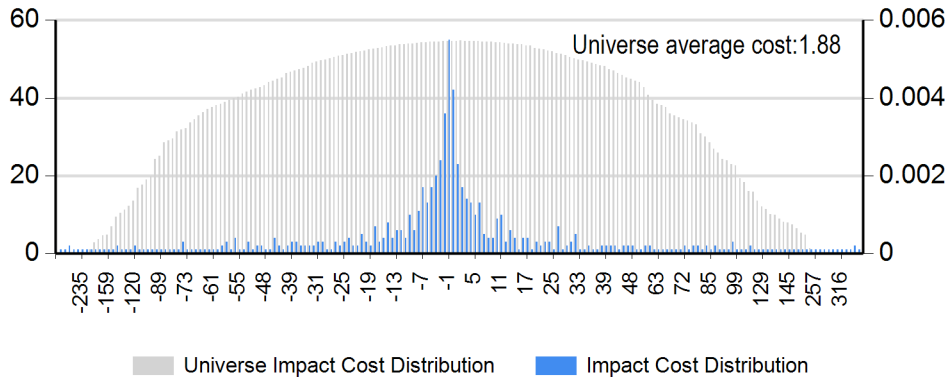
Results :

| BENCHMARK PERFORMANCE  |   |   | E - Score  |
|--|---|---|--|
| Commission   | Fees  | Full Day VWAP   |  |
| <ul style="list-style-type: none"> <li>Your commission cost was +6.85 bp or \$ +\$74,135 (7.84 bp better than the Elkins/McSherry Universe)</li> </ul> | <ul style="list-style-type: none"> <li>Your fee cost was +2.35 bp or \$ +25,428 (+0.17 bp worse than the Elkins/McSherry Universe)</li> </ul> | <ul style="list-style-type: none"> <li>Your market impact cost was +0.68 bp or \$+7,384 (1.20 bp better than the Elkins/McSherry Universe)</li> <li>Your overall trading cost of +9.89 bp was 8.86 bp better than the Elkins/McSherry Universe.</li> <li>Sacramento County trading was higher than the Elkins/McSherry Universe in 4 countries and lower than the Elkins/McSherry Universe in 15 countries.</li> <li>10 of your brokers had trading cost higher than summary universe of countries (principal weighted) in which they traded. 32 of your brokers had lower trading cost.</li> </ul> | <ul style="list-style-type: none"> <li>E - Score : 0.02</li> </ul> |

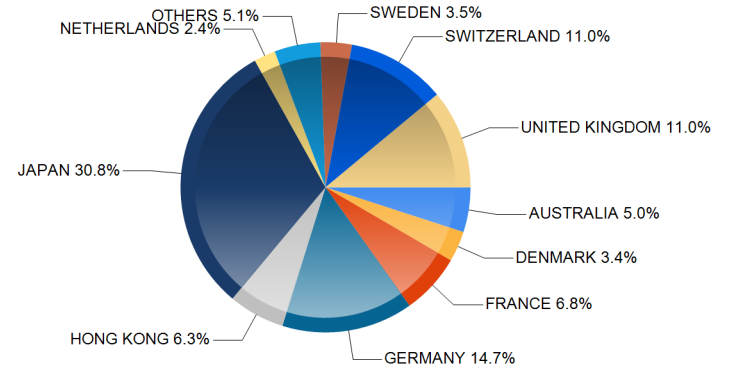
(+) = Cost

EXECUTIVE SUMMARY

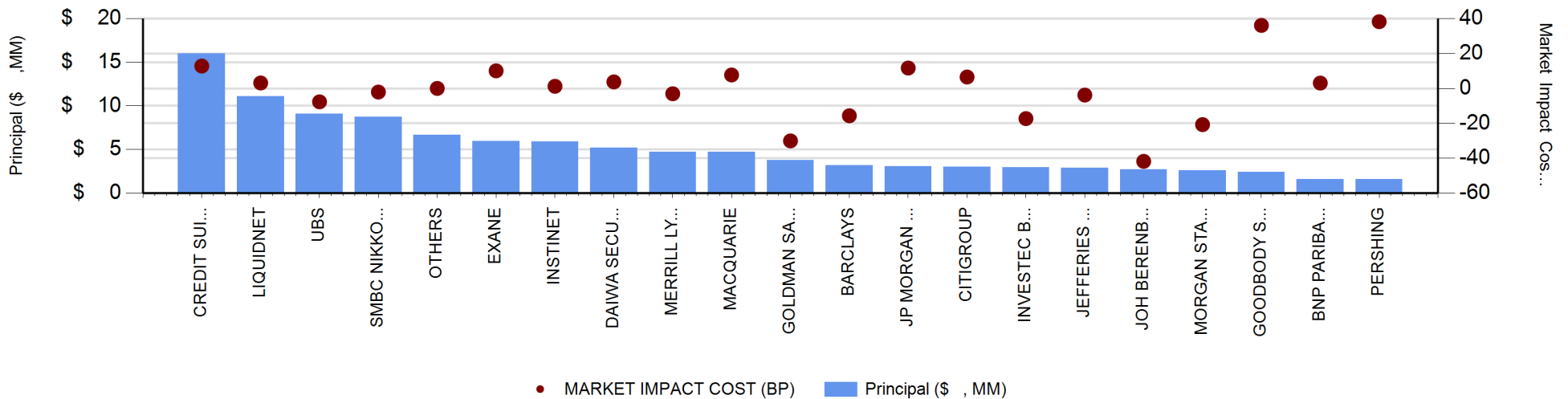
Cost Distribution



Principal Across Country



Top 20 Brokers in Principal Traded





(+) = Cost

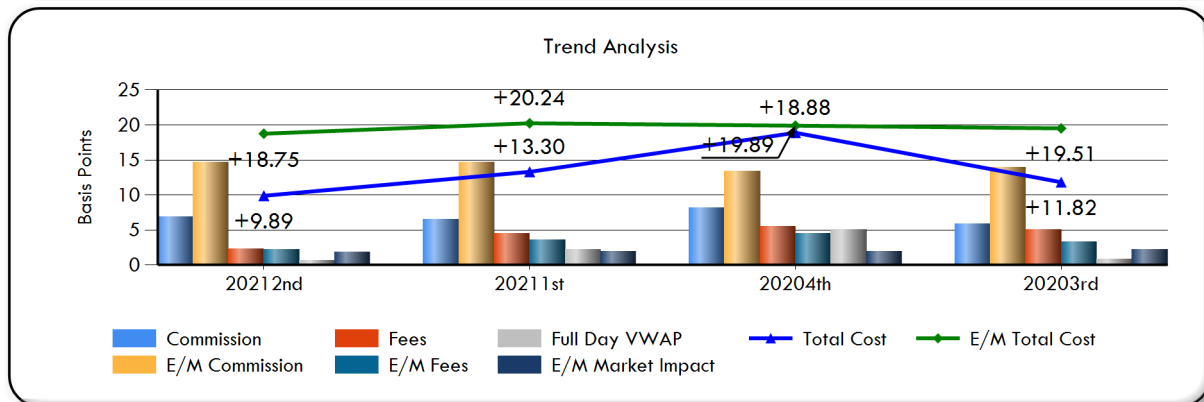
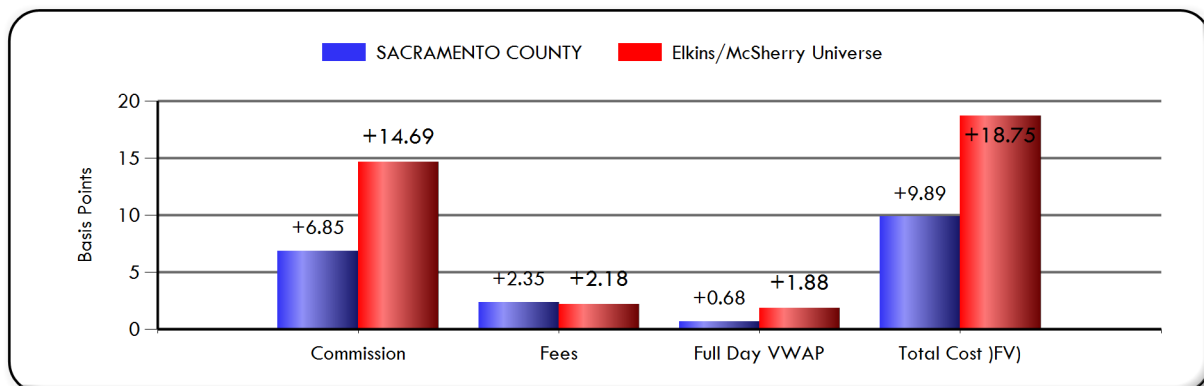
**EXECUTIVE SUMMARY**

**TOTAL PORTFOLIO COST PERFORMANCE**

| Side         | COMMISSION           |                  |                      | Fees         |              | MARKET IMPACT |                        | Total Cost   | Total Cost/Savings Vs. Universe | E - Score   |
|--------------|----------------------|------------------|----------------------|--------------|--------------|---------------|------------------------|--------------|---------------------------------|-------------|
|              | Your Avg. Commission | Bundled Universe | All Trading Universe | Fees         | Universe     | Full Day VWAP | Universe Full Day VWAP |              | Commission+Fees Full Day VWAP   |             |
|              | (bp)                 | (bp)             | (bp)                 | (bp)         | (bp)         | (bp)          | (bp)                   | (bp)         | (bp)                            |             |
| Sell         | +7.59                | +15.95           | +4.01                | +1.61        | +1.53        | +0.26         | +2.34                  | +9.46        | 10.37                           | 0.00        |
| Buy          | +6.27                | +13.69           | +4.10                | +2.94        | +2.70        | +1.02         | +1.50                  | +10.23       | 7.67                            | 0.04        |
| <b>Total</b> | <b>+6.85</b>         | <b>+14.69</b>    | <b>+4.06</b>         | <b>+2.35</b> | <b>+2.18</b> | <b>+0.68</b>  | <b>+1.88</b>           | <b>+9.89</b> | <b>8.86</b>                     | <b>0.02</b> |

**TRADING COMPONENTS**

|                                  | Buys       | Sells      |
|----------------------------------|------------|------------|
| Trade Principal                  | 60,411,845 | 47,743,226 |
| Shares                           | 1,623,035  | 4,490,144  |
| Unique Names                     | 45         | 35         |
| Liquidity (% POV)                | 0.269      | 0.670      |
| Avg. Order Size                  | 3,521      | 20,317     |
| Avg. Order Completion Time (min) | N/A        | N/A        |
| Total Number of Trades           | 461        | 221        |





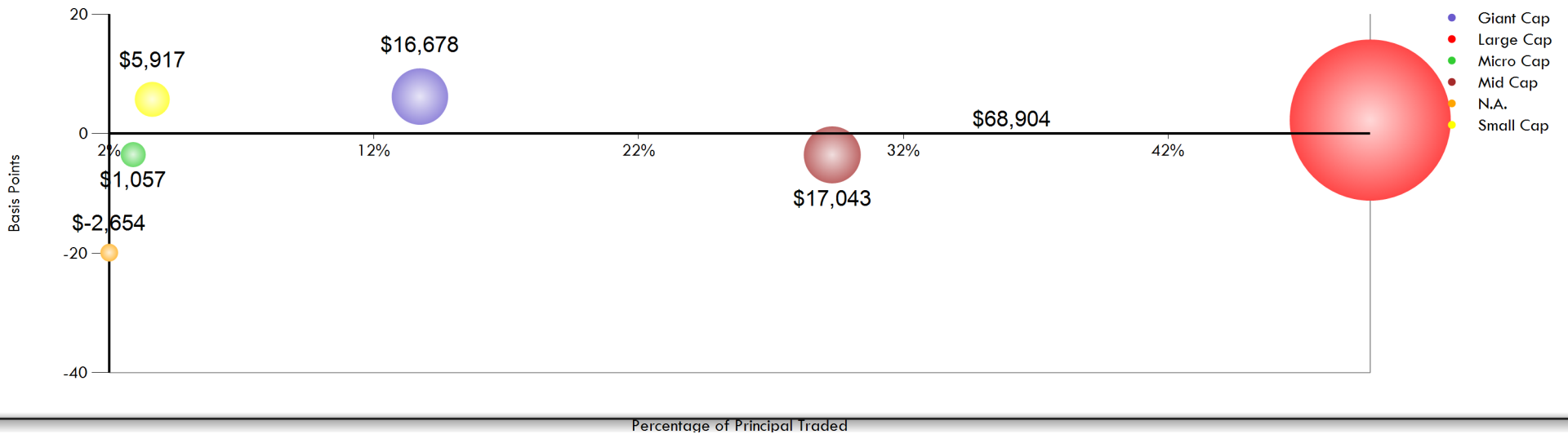
(+) = Cost

**EXECUTIVE SUMMARY**

**MARKET CAPITALIZATION**

| Market Cap | % Traded | Avg. Principal Per Order | COMMISSION      |                  | MARKET IMPACT |                        | Total Cost | Total Cost/Savings | E - Score | Market Cap Definition        |
|------------|----------|--------------------------|-----------------|------------------|---------------|------------------------|------------|--------------------|-----------|------------------------------|
|            |          |                          | Your Commission | Bundled Universe | Full Day VWAP | Universe Full Day VWAP |            |                    |           |                              |
|            | (%)      | (\$)                     | (bp)            | (bp)             | (bp)          | (bp)                   | (bp)       | (bp)               |           |                              |
| Large Cap  | 49.43 %  | 249,822                  | +7.74           | +13.82           | +2.28         | +1.65                  | +12.89     | 5.29               | 0.02      | \$5 Billion To \$25 Billion  |
| Mid Cap    | 29.11 %  | 88,438                   | +6.71           | +16.23           | 3.54          | +2.56                  | +5.41      | 15.04              | -0.03     | \$1 Billion To \$5 Billion   |
| Giant Cap  | 13.53 %  | 340,420                  | +4.42           | +13.79           | +6.22         | +1.54                  | +11.40     | 4.80               | 0.19      | Over \$25 Billion            |
| Small Cap  | 3.42 %   | 127,671                  | +5.03           | +17.38           | +5.76         | +1.17                  | +15.98     | 7.65               | 0.14      | \$250 Million To \$1 Billion |
| Micro Cap  | 2.70 %   | 104,412                  | +7.10           | +14.62           | 3.49          | +1.48                  | +3.62      | 15.00              | -0.02     | Under \$250 Million          |
| N.A.       | 1.80 %   | 162,101                  | +6.23           | +15.47           | 19.91         | +1.41                  | 13.68      | 30.59              | -0.46     |                              |

**Total Cost by Market Cap**







(+) = Cost

**TRADE CYCLE DETAIL**

**4 LOWEST COST MANAGER (Full Day VWAP)**



| Manager              | Principal Traded<br>(\$ Millions) | Total Orders Traded | % Principal | Avg. Principal<br>(\$) | E - Score | COMMISSION         |                          | MARKET IMPACT         |                                | TOTAL COST/SAVINGS                                  | Commission+Fees+Full Day VWAP Vs. Universe TREND |                  |                  |
|----------------------|-----------------------------------|---------------------|-------------|------------------------|-----------|--------------------|--------------------------|-----------------------|--------------------------------|---|--|------------------|------------------|
|                      |                                   |                     |             |                        |           | Commission<br>(bp) | Bundled Universe<br>(bp) | Full Day VWAP<br>(bp) | Universe Full Day VWAP<br>(bp) | Commission +Fees+Full Day VWAP Vs. Universe<br>(bp) | 2021 1st<br>(bp)                                 | 2020 4th<br>(bp) | 2020 3rd<br>(bp) |
| LSV ASSET MANAGEMENT | 32                                | 266                 | 29.33%      | 119,264                | 0.25      | +5.25              | +15.37                   | +8.37                 | +1.76                          | 3.64  | 3.72   | 12.96            | 10.56            |
| WALTER SCOTT INTL EA | 25                                | 29                  | 23.05%      | 859,732                | 0.04      | +7.41              | +13.50                   | +2.42                 | +1.79                          | 5.34  | 5.08   | +6.98            | 17.09            |
| WILLIAM BLAIR & COMP | 18                                | 197                 | 17.10%      | 93,882                 | 0.04      | +7.02              | +16.28                   | +2.04                 | +1.79                          | 8.33  | 10.89  | 9.78             | +3.03            |
| LAZARD ASSET MANAGEM | 33                                | 190                 | 30.52%      | 173,704                | -0.22     | +7.89              | +14.04                   | 8.77                  | +2.10                          | 16.82   | 5.88   | +9.50            | 6.83             |

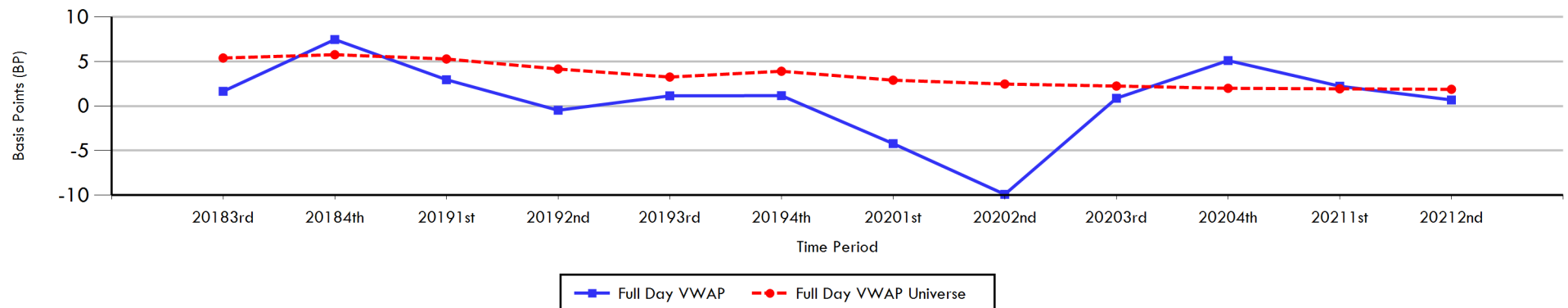
**NOTES**

- Manager above made up 100.00 % of principal traded.

### TRADE HISTORY

| Period  | Total Principal<br>(\$) | Commission<br>(bp) | Commission Universe<br>(bp) | Fees<br>(bp) | Fees Universe<br>(bp) | Full Day VWAP<br>(bp) | Full Day VWAP Universe<br>(bp) | Total Cost/Savings Vs. Universe<br>(bp) |
|---------|-------------------------|--------------------|-----------------------------|--------------|-----------------------|-----------------------|--------------------------------|---|
| 20183rd | 84,663,286              | +6.92              | +13.97                      | +5.95        | +3.81                 | +1.64                 | +5.39                          | 8.65                                    |
| 20184th | 132,282,303             | +7.47              | +14.63                      | +4.94        | +3.67                 | +7.46                 | +5.76                          | 4.18                                    |
| 20191st | 75,137,208              | +7.16              | +13.73                      | +6.74        | +5.73                 | +2.95                 | +5.28                          | 7.88                                    |
| 20192nd | 70,813,093              | +5.93              | +14.19                      | +8.58        | +8.20                 | 0.48                  | +4.15                          | 12.50                                   |
| 20193rd | 79,515,054              | +5.84              | +14.32                      | +3.19        | +3.04                 | +1.14                 | +3.25                          | 10.44                                   |
| 20194th | 151,282,246             | +6.63              | +13.69                      | +4.01        | +2.96                 | +1.16                 | +3.90                          | 8.74                                    |
| 20201st | 150,544,093             | +6.57              | +13.82                      | +6.85        | +5.12                 | 4.22                  | +2.90                          | 12.63                                   |
| 20202nd | 87,805,344              | +5.99              | +13.63                      | +5.49        | +3.89                 | 9.91                  | +2.47                          | 18.40                                   |
| 20203rd | 111,885,782             | +5.88              | +13.92                      | +5.08        | +3.34                 | +0.87                 | +2.24                          | 7.68                                    |
| 20204th | 123,198,008             | +8.22              | +13.38                      | +5.56        | +4.53                 | +5.10                 | +1.99                          | 1.01                                    |
| 20211st | 136,997,071             | +6.55              | +14.68                      | +4.53        | +3.63                 | +2.22                 | +1.93                          | 6.94                                    |
| 20212nd | 108,155,071             | +6.85              | +14.69                      | +2.35        | +2.18                 | +0.68                 | +1.88                          | 8.86                                    |

TRADE HISTORY





## SACRAMENTO COUNTY

US Fixed Income Analysis

Period End June 30, 2021



## EXECUTIVE SUMMARY

Elkins/McSherry has been providing trading cost analyses to institutional investors since 1991. During that time we have produced Post-Trade Cost Analyses for many of the worlds largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an un-matched collection of global fixed income market and Universe data, Elkins/McSherry has recently produced a Trading Cost Analysis on behalf of Sacramento County. This study evaluates U.S. fixed income executions from April 01,2021 to June 30,2021. The analysis included trading of 714 trades in 146 different issues representing \$1,140,625,925 in principal across municipals, mortgages, governments, corporates And agencies.

### Methodology:

The Elkins/McSherry analysis measures trading efficiency by quantifying the cost of each trade by comparing your executed price to the average price or benchmark price on the day of the trade and to the Elkins/McSherry U.S. Fixed Income Trading Cost Universe. Daily prices are calculated from Market Axess, Tullett Prebon, Bloomberg and Reuters. For comparison purposes, Elkins/McSherry establishes average institutional trading costs quarterly for the most actively traded U.S.treasury, corporates, agencies, mortgages and municipal issues. The "Universe" is the average trading cost incurred by pension funds, investment managers, banks and brokers for Treasuries, Corporates, Agencies, Mortgages and Municipals. Benchmark prices are calculated by using the following methodologies: Government Bonds – Average of six indicative prices received from Tullett Prebon. Municipal Bonds – Average of institutional sized execution prices from MSRB. If actual trade prices are not available the Elkins/McSherry analysis defaults to a fair value price from Reuters or Bloomberg. Corporate Bonds – Average of execution prices where available, from TRACE and Market Axess. If actual trade prices are not available the Elkins/McSherry analysis defaults to a fair value price from Reuters or Bloomberg. Mortgage Bonds – Reuters or Bloomberg fair value prices.

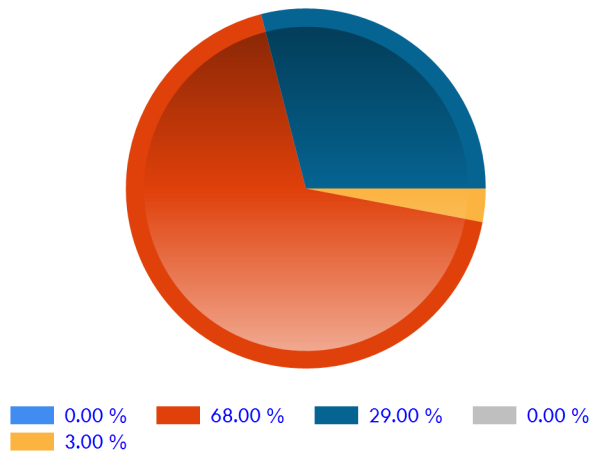
### Results:

| GRAND TOTAL PERFORMANCE |                         |                  |                  |                           |                  |                        |  | TRADE COST HISTORICAL PERFORMANCE |            |            |            |
|-------------------------|-------------------------|------------------|------------------|---------------------------|------------------|------------------------|--|-----------------------------------|------------|------------|------------|
| Buy/Sell                | Principal<br>(Mil. \$ ) | No. of<br>Trades | No. of<br>Issues | Trade Cost<br>(Thous. \$) | Trade Cost<br>BP | Univ. Trade<br>Cost BP | Cost Diff. from Universe<br>(Thous. \$) BP | Q1<br>2021                        | Q4<br>2020 | Q3<br>2020 | Q2<br>2020 |
| BUYS                    | 574                     | 363              | 101              | 100.92                    | 1.76             | +14.57                 | 936.36 16.33                               | 0.34                              | 2.83       | +1.63      | +1.31      |
| SELLS                   | 567                     | 351              | 71               | +109.44                   | +1.93            | +10.01                 | 458.32 8.08                                | +1.22                             | 1.07       | +0.26      | +0.29      |
| GRAND TOTAL             | 1,141                   | 714              | 146              | +8.51                     | +0.07            | +12.30                 | 1,394.68 12.23                             | +0.40                             | 2.02       | +1.06      | +0.78      |

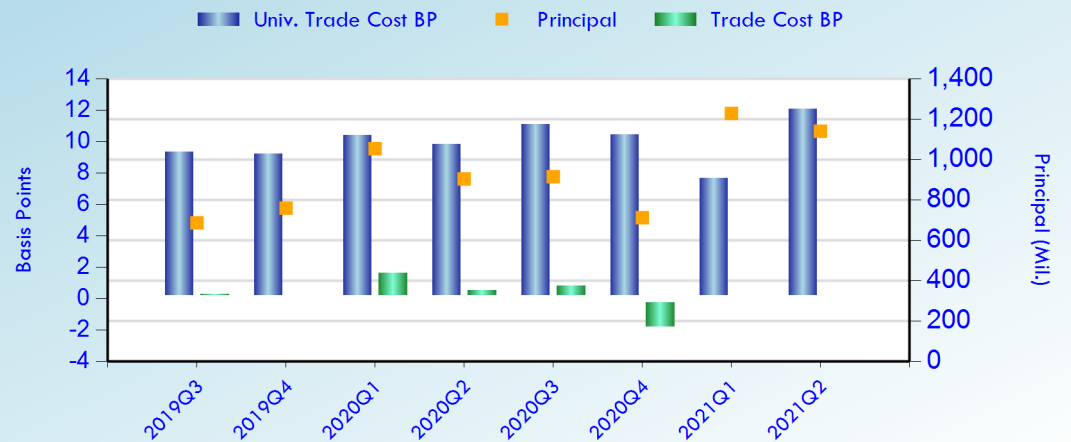
EXECUTIVE SUMMARY

| BOND TYPES PERFORMANCE |                     |               |               |                        |               |                     |   | TRADE COST HISTORICAL PERFORMANCE |         |         |         |
|------------------------|---------------------|---------------|---------------|------------------------|---------------|---------------------|---|-----------------------------------|---------|---------|---------|
| Bond Type              | Principal (Mil. \$) | No. of Trades | No. of Issues | Trade Cost (Thous. \$) | Trade Cost BP | Univ. Trade Cost BP | Cost Diff. from Universe (Thous. \$) BP | Q1 2021                           | Q4 2020 | Q3 2020 | Q2 2020 |
| Governments            | 773                 | 473           | 62            | +9.52                  | +0.12         | +7.73               | 587.57 7.61                             | +1.54                             | 0.65    | 0.15    | 0.30    |
| Mortgages              | 334                 | 160           | 16            | +3.54                  | +0.11         | +22.32              | 742.00 22.21                            | 1.06                              | 13.38   | +3.82   | +1.78   |
| Corporates             | 32                  | 75            | 62            | 6.58                   | 2.05          | +17.92              | 64.07 19.97                             | +0.15                             | +6.66   | +6.88   | +3.48   |
| Municipals             | 1                   | 5             | 5             | +0.29                  | +2.32         | +15.52              | 1.66 13.20                              | +14.62                            | +5.99   | -       | +0.51   |
| Agencies               | <1                  | 1             | 1             | +1.74                  | +28.99        | +18.63              | +0.62 +10.36                            | -                                 | -       | -       | +4.98   |

Bonds by Principal Traded



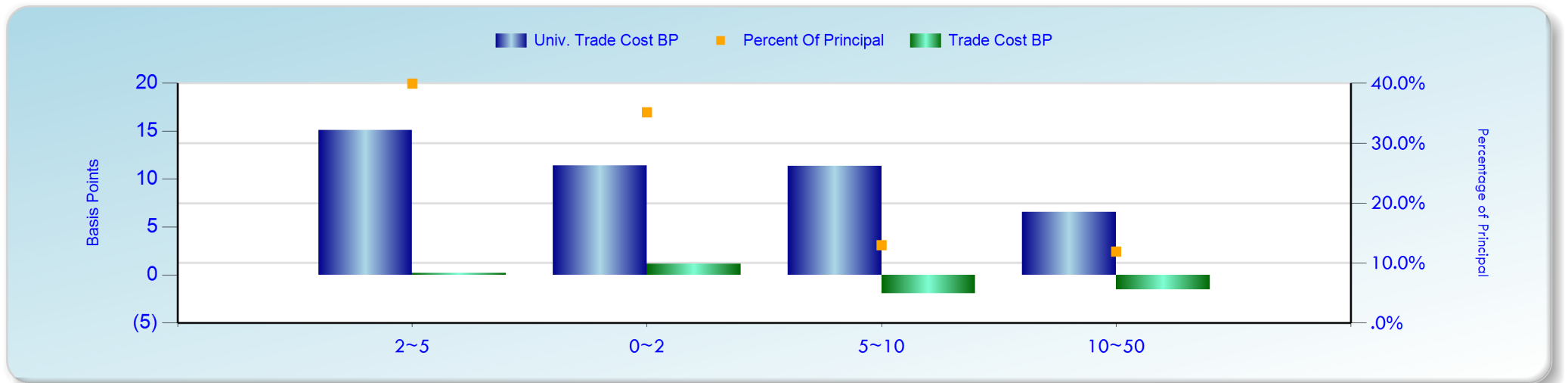
Historical Trade Cost Trend



EXECUTIVE SUMMARY

EXECUTION PERFORMANCE SUMMARY

| Trade Size (Millions) | Principal (Mil. \$ ) | No. of Trades | No. of Issues | Trade Cost (Thous. \$) | Trade Cost BP | Univ. Trade Cost BP | Cost Diff. from Universe (Thous. \$) | BP    |
|-----------------------|----------------------|---------------|---------------|------------------------|---------------|---------------------|--------------------------------------|-------|
| 2~5                   | 455                  | 157           | 44            | +10.07                 | +0.22         | +15.09              | 677.38                               | 14.87 |
| 0~2                   | 401                  | 526           | 122           | +47.50                 | +1.18         | +11.41              | 409.82                               | 10.23 |
| 5~10                  | 148                  | 23            | 16            | 28.62                  | 1.93          | +11.39              | 197.42                               | 13.32 |
| 10~50                 | 136                  | 8             | 6             | 20.44                  | 1.50          | +6.59               | 110.06                               | 8.09  |



**Manager PERFORMANCE**

| Manager PERFORMANCE  |                         |                  |                  |                           |                  |                        |   | TRADE COST HISTORICAL PERFORMANCE |            |            |            |            |
|----------------------|-------------------------|------------------|------------------|---------------------------|------------------|------------------------|---|-----------------------------------|------------|------------|------------|------------|
| Manager              | Principal<br>(Mil. \$ ) | No. of<br>Trades | No. of<br>Issues | Trade Cost<br>(Thous. \$) | Trade Cost<br>BP | Univ. Trade<br>Cost BP | Cost Diff. from Universe<br>(Thous. \$) | BP                                | Q1<br>2021 | Q4<br>2020 | Q3<br>2020 | Q2<br>2020 |
| METROPOLITAN WEST MG | 868                     | 605              | 100              | 3.65                      | 0.04             | +14.02                 | 1,220.35                                | 14.06                             | +0.13      | 2.40       | +0.98      | +0.00      |
| NEUBERGER BERMAN     | 251                     | 60               | 34               | +7.67                     | +0.31            | +6.22                  | 148.50                                  | 5.91                              | +3.27      | 1.45       | +1.62      | +3.06      |
| BARCLAYS 1-10 YR TIP | 22                      | 49               | 16               | +4.50                     | +2.08            | +13.98                 | 25.83                                   | 11.90                             | 1.53       | +3.68      | +1.53      | +0.00      |

### HISTORICAL DATA

| Quarter               | Principal<br>(Thous. \$) | No. of<br>Trades | No. of<br>Issues | Trade Cost<br>(Thous. \$) | Trade Cost<br>BP | Univ. Trade<br>Cost BP | Cost Diff. from Universe<br>(Thous. \$) | BP    |
|-----------------------|--------------------------|------------------|------------------|---------------------------|------------------|------------------------|---|-------|
| 04/01/2021-06/30/2021 | 1,140,626                | 714              | 146              | +8.51                     | +0.07            | +12.30                 | 1,394.68                                | 12.23 |
| 01/01/2021-03/31/2021 | 1,228,670                | 773              | 156              | +49.54                    | +0.40            | +7.91                  | 922.83                                  | 7.51  |
| Year-Ending 2021      | 2,369,296                | 1487             |                  | +58.05                    | +0.25            | +10.03                 | 2,317.51                                | 9.78  |
| 10/01/2020-12/31/2020 | 712,135                  | 425              | 128              | 143.93                    | 2.02             | +10.68                 | 904.17                                  | 12.70 |
| 07/01/2020-09/30/2020 | 914,835                  | 532              | 159              | +97.11                    | +1.06            | +11.35                 | 940.79                                  | 10.29 |
| 04/01/2020-06/30/2020 | 903,498                  | 445              | 148              | +70.23                    | +0.78            | +10.08                 | 840.37                                  | 9.30  |
| 01/02/2020-03/31/2020 | 1,053,957                | 691              | 217              | +198.86                   | +1.89            | +10.64                 | 922.37                                  | 8.75  |
| Year-Ending 2020      | 3,584,426                | 2093             |                  | +222.27                   | +0.62            | +10.69                 | 3,607.70                                | 10.06 |
| 10/01/2019-12/31/2019 | 759,298                  | 479              | 127              | 17.36                     | 0.23             | +9.45                  | 734.68                                  | 9.68  |
| 07/01/2019-09/30/2019 | 686,683                  | 408              | 111              | +37.19                    | +0.54            | +9.59                  | 621.19                                  | 9.05  |
| 04/01/2019-06/30/2019 | 446,471                  | 355              | 107              | +32.98                    | +0.74            | +9.54                  | 392.87                                  | 8.80  |
| 01/01/2019-03/31/2019 | 777,794                  | 441              | 181              | 19.31                     | 0.25             | +11.49                 | 913.04                                  | 11.74 |
| Year-Ending 2019      | 2,670,246                | 1683             |                  | +33.50                    | +0.13            | +10.09                 | 2,661.79                                | 9.97  |
| 10/01/2018-12/31/2018 | 713,870                  | 364              | 137              | +23.27                    | +0.33            | +8.75                  | 601.62                                  | 8.42  |
| 07/01/2018-09/30/2018 | 578,565                  | 315              | 150              | +2.45                     | +0.04            | +7.31                  | 420.64                                  | 7.27  |
| 04/01/2018-06/30/2018 | 779,482                  | 378              | 169              | +203.86                   | +2.62            | +9.58                  | 542.73                                  | 6.96  |
| 01/01/2018-03/31/2018 | 1,666,649                | 1608             | 992              | +113.13                   | +0.68            | +8.88                  | 1,367.40                                | 8.20  |
| Year-Ending 2018      | 3,738,566                | 2665             |                  | +342.70                   | +0.92            | +8.76                  | 2,932.39                                | 7.84  |
| 10/01/2017-12/31/2017 | 624,736                  | 649              | 254              | 37.30                     | 0.60             | +6.59                  | 448.75                                  | 7.19  |
| 07/01/2017-09/30/2017 | 733,365                  | 712              | 245              | 70.43                     | 0.96             | +7.13                  | 593.40                                  | 8.09  |
| 04/01/2017-06/30/2017 | 789,018                  | 849              | 277              | 11.21                     | 0.14             | +6.26                  | 504.99                                  | 6.40  |
| 01/01/2017-03/31/2017 | 710,311                  | 779              | 281              | +88.61                    | +1.25            | +7.07                  | 413.59                                  | 5.82  |
| Year-Ending 2017      | 2,857,429                | 2989             |                  | 30.32                     | 0.11             | +6.76                  | 1,960.73                                | 6.86  |
| 10/01/2016-12/31/2016 | 711,667                  | 646              | 221              | 68.72                     | 0.97             | +6.26                  | 514.24                                  | 7.23  |





## SACRAMENTO COUNTY

Global Fixed Income Analysis

Period End June 30, 2021



## EXECUTIVE SUMMARY

Elkins/McSherry has been providing trading cost analyses to institutional investors since 1991. During that time we have produced Post-Trade Cost Analyses for many of the worlds largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an un-matched collection of global fixed income market and Universe data, Elkins/McSherry has recently produced a Trading Cost Analysis on behalf of Sacramento County. This study evaluates global fixed income executions from April 01,2021 to June 30,2021. The analysis included trading of 157 trades in 66 different issues representing \$59,341,631 in principal across municipals, mortgages, governments And corporates.

### Methodology:

The cost of each trade will be determined by comparing your executed price to the average or benchmark price of the issue on the day of the trade and to the Elkins/McSherry Fixed Income Trading Cost Universe. For comparison purposes, Elkins/McSherry establishes average institutional trading costs quarterly for governments, corporates and agency issues. The Universe is the average trading cost incurred by pension funds, investment managers, banks and brokers.

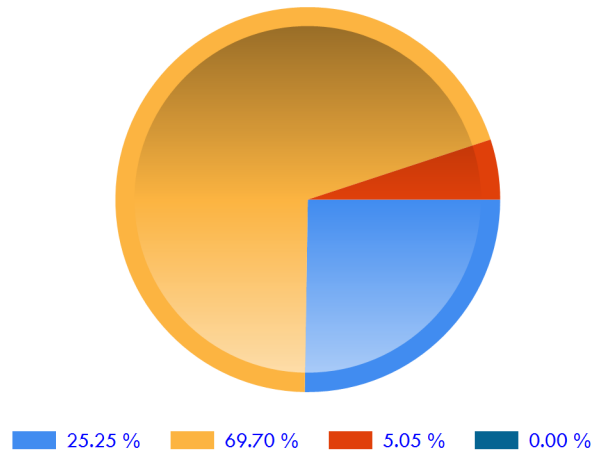
### Results:

| GRAND TOTAL PERFORMANCE |                         |                  |                  |                           |                  |                        |   | TRADE COST HISTORICAL PERFORMANCE |            |            |            |            |
|-------------------------|-------------------------|------------------|------------------|---------------------------|------------------|------------------------|---|-----------------------------------|------------|------------|------------|------------|
| Buy/Sell                | Principal<br>(Mil. \$ ) | No. of<br>Trades | No. of<br>Issues | Trade Cost<br>(Thous. \$) | Trade Cost<br>BP | Univ. Trade<br>Cost BP | Cost Diff. from Universe<br>(Thous. \$) | BP                                | Q1<br>2021 | Q4<br>2020 | Q3<br>2020 | Q2<br>2020 |
| BUYS                    | 38                      | 63               | 26               | 6.51                      | 1.71             | +5.90                  | 28.99                                   | 7.61                              | 7.15       | +19.81     | 22.89      | 36.44      |
| SELLS                   | 21                      | 94               | 41               | +6.95                     | +3.27            | +5.95                  | 5.71                                    | 2.68                              | +8.06      | +8.92      | +26.95     | +7.87      |
| GRAND TOTAL             | 59                      | 157              | 66               | +0.43                     | +0.07            | +5.92                  | 34.70                                   | 5.85                              | +1.04      | +13.57     | 3.02       | 21.32      |

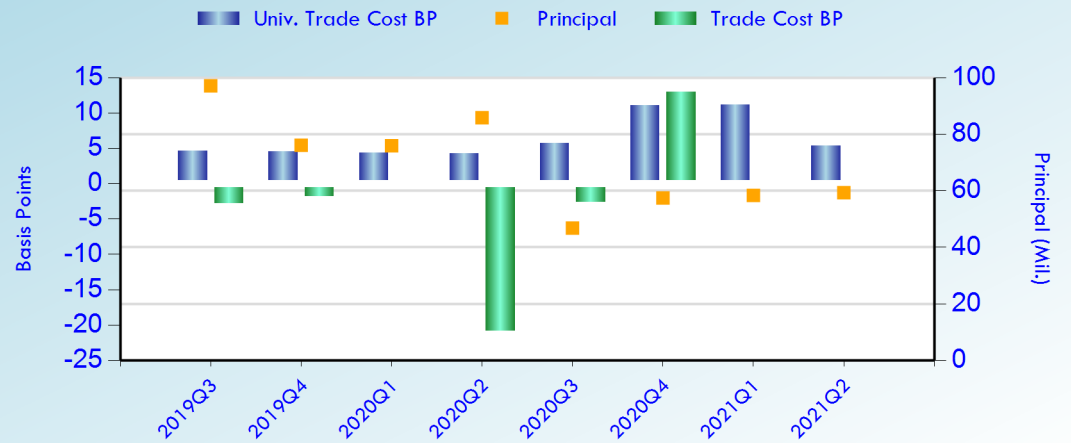
EXECUTIVE SUMMARY

| BOND TYPES PERFORMANCE |                     |               |               |                        |               |                     |                                      | TRADE COST HISTORICAL PERFORMANCE |         |         |         |         |
|------------------------|---------------------|---------------|---------------|------------------------|---------------|---------------------|--------------------------------------|-----------------------------------|---------|---------|---------|---------|
| Bond Type              | Principal (Mil. \$) | No. of Trades | No. of Issues | Trade Cost (Thous. \$) | Trade Cost BP | Univ. Trade Cost BP | Cost Diff. from Universe (Thous. \$) | BP                                | Q1 2021 | Q4 2020 | Q3 2020 | Q2 2020 |
| Governments            | 41                  | 91            | 21            | 12.80                  | 3.12          | +5.93               | 37.10                                | 9.05                              | 0.87    | +1.22   | +15.68  | 0.04    |
| Corporates             | 15                  | 58            | 37            | +11.90                 | +7.89         | +5.89               | +3.02                                | +2.00                             | +4.48   | 3.32    | 8.93    | 38.87   |
| Mortgages              | 3                   | 7             | 7             | +1.27                  | +4.05         | +5.95               | 0.60                                 | 1.90                              | 1.38    | +162.55 | 192.36  | 15.84   |
| Municipals             | <1                  | 1             | 1             | +0.06                  | +3.75         | +5.95               | 0.04                                 | 2.20                              | -       | -       | -       | 36.07   |

Bonds by Principal Traded



Historical Trade Cost Trend

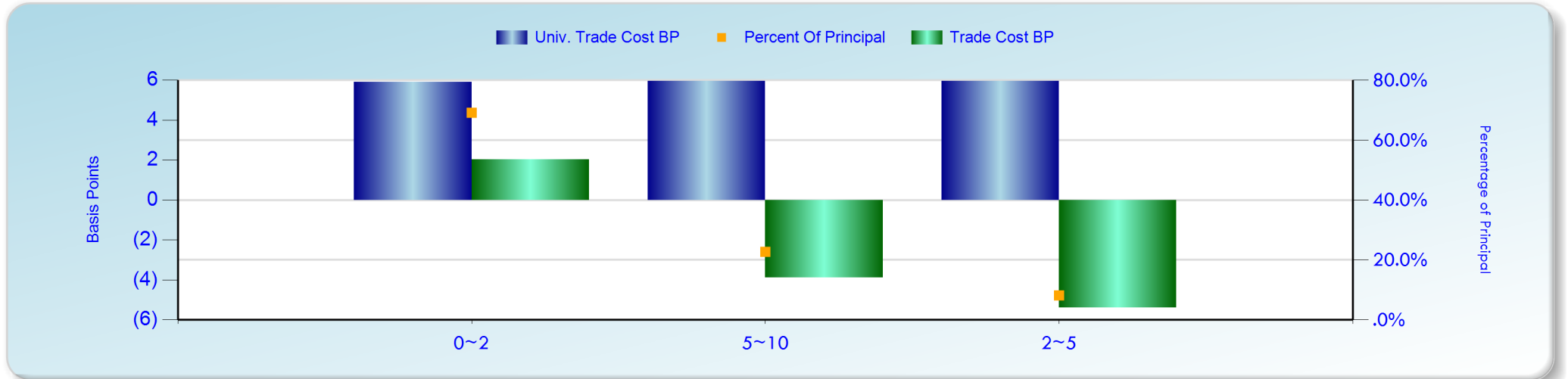




**EXECUTIVE SUMMARY**

**EXECUTION PERFORMANCE SUMMARY**

| Trade Size (Millions) | Principal (Mil. \$) | No. of Trades | No. of Issues | Trade Cost (Thous. \$) | Trade Cost BP | Univ. Trade Cost BP | Cost Diff. from Universe (Thous. \$) | BP    |
|-----------------------|---------------------|---------------|---------------|------------------------|---------------|---------------------|--------------------------------------|-------|
| 0~2                   | 41                  | 153           | 65            | +8.29                  | +2.02         | +5.91               | 15.94                                | 3.89  |
| 5~10                  | 13                  | 2             | 1             | 5.25                   | 3.89          | +5.95               | 13.27                                | 9.84  |
| 2~5                   | 5                   | 2             | 1             | 2.61                   | 5.39          | +5.95               | 5.50                                 | 11.34 |



**Manager PERFORMANCE**

| Manager PERFORMANCE  |                         |                  |                  |                           |                  |                        |  |      | TRADE COST HISTORICAL PERFORMANCE |            |            |            |
|----------------------|-------------------------|------------------|------------------|---------------------------|------------------|------------------------|--|------|-----------------------------------|------------|------------|------------|
| Manager              | Principal<br>(Mil. \$ ) | No. of<br>Trades | No. of<br>Issues | Trade Cost<br>(Thous. \$) | Trade Cost<br>BP | Univ. Trade<br>Cost BP | Cost Diff. from Universe<br>(Thous. \$) BP |      | Q1<br>2021                        | Q4<br>2020 | Q3<br>2020 | Q2<br>2020 |
| PRUDENTIAL INVESTMEN | 59                      | 157              | 66               | +0.43                     | +0.07            | +5.92                  | 34.70                                      | 5.85 | +1.04                             | +13.57     | 3.02       | 21.32      |

### HISTORICAL DATA

| Quarter               | Principal<br>(Thous. \$) | No. of<br>Trades | No. of Issues | Trade Cost  |        | Univ. Trade<br>Cost BP | Cost Diff. from Universe |       |
|-----------------------|--------------------------|------------------|---------------|-------------|--------|------------------------|--------------------------|-------|
|                       |                          |                  |               | (Thous. \$) | BP     |                        | (Thous. \$)              | BP    |
| 04/01/2021-06/30/2021 | 59,342                   | 157              | 66            | +0.43       | +0.07  | +5.92                  | 34.70                    | 5.85  |
| 01/01/2021-03/31/2021 | 58,367                   | 140              | 85            | +6.08       | +1.04  | +11.71                 | 62.28                    | 10.67 |
| Year-Ending 2021      | 117,709                  | 297              |               | +6.52       | +0.55  | +8.79                  | 96.99                    | 8.24  |
| 10/01/2020-12/31/2020 | 57,483                   | 102              | 61            | +77.99      | +13.57 | +11.66                 | +10.97                   | +1.91 |
| 07/01/2020-09/30/2020 | 46,840                   | 61               | 47            | 14.12       | 3.02   | +6.30                  | 43.63                    | 9.32  |
| 04/01/2020-06/30/2020 | 85,881                   | 143              | 98            | 183.09      | 21.32  | +4.82                  | 224.49                   | 26.14 |
| 01/02/2020-03/31/2020 | 75,943                   | 157              | 84            | 1.05        | 0.14   | +4.93                  | 38.49                    | 5.07  |
| Year-Ending 2020      | 266,147                  | 463              |               | 120.27      | 4.52   | +6.59                  | 295.65                   | 11.11 |
| 10/01/2019-12/31/2019 | 76,119                   | 174              | 90            | 16.90       | 2.22   | +5.07                  | 55.50                    | 7.29  |
| 07/01/2019-09/30/2019 | 97,170                   | 144              | 79            | 31.64       | 3.26   | +5.17                  | 81.92                    | 8.43  |
| 04/01/2019-06/30/2019 | 58,138                   | 153              | 87            | 6.84        | 1.18   | +5.19                  | 37.02                    | 6.37  |
| 01/01/2019-03/31/2019 | 93,964                   | 228              | 119           | +14.36      | +1.53  | +6.02                  | 42.17                    | 4.49  |
| Year-Ending 2019      | 325,391                  | 699              |               | 41.02       | 1.26   | +5.40                  | 216.61                   | 6.66  |
| 10/01/2018-12/31/2018 | 66,814                   | 146              | 75            | +9.69       | +1.45  | +7.24                  | 38.71                    | 5.79  |
| 07/01/2018-09/30/2018 | 37,664                   | 102              | 50            | +0.18       | +0.05  | +5.24                  | 19.56                    | 5.19  |
| 04/01/2018-06/30/2018 | 77,479                   | 217              | 112           | +12.54      | +1.62  | +5.51                  | 30.15                    | 3.89  |
| 01/01/2018-03/31/2018 | 51,291                   | 127              | 70            | 1.01        | 0.20   | +10.09                 | 52.77                    | 10.29 |
| Year-Ending 2018      | 233,248                  | 592              |               | +21.40      | +0.92  | +6.97                  | 141.19                   | 6.05  |
| 10/01/2017-12/31/2017 | 47,359                   | 119              | 46            | 21.97       | 4.64   | +4.00                  | 40.93                    | 8.64  |
| 07/01/2017-09/30/2017 | 74,271                   | 178              | 73            | +11.09      | +1.49  | +2.75                  | 9.35                     | 1.26  |
| 04/01/2017-06/30/2017 | 65,905                   | 139              | 61            | +10.87      | +1.65  | +3.17                  | 10.02                    | 1.52  |
| 01/01/2017-03/31/2017 | 88,323                   | 207              | 89            | +24.27      | +2.75  | +3.32                  | 5.07                     | 0.57  |
| Year-Ending 2017      | 275,858                  | 643              |               | +24.27      | +0.88  | +3.25                  | 65.38                    | 2.37  |
| 10/01/2016-12/31/2016 | 59,762                   | 110              | 50            | 5.73        | 0.96   | +3.49                  | 26.57                    | 4.45  |