



# Board of Retirement Regular Meeting

## Sacramento County Employees' Retirement System

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### Agenda Item 10

**MEETING DATE:** February 16, 2022

**SUBJECT:** Trading Cost Analysis Report—Fourth Quarter 2021

**SUBMITTED FOR:**  Consent       Deliberation and Action       Receive and File

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#### **RECOMMENDATION**

Staff recommends the Board receive and file the Quarterly Trading Cost Analysis Reports for the quarter ending December 31, 2021.

#### **PURPOSE**

This agenda item complies with SCERS' investment policy statement reporting requirements and contributes to the effective management and oversight of investment activities.

#### **SUMMARY**

SCERS utilizes the services of Elkins/McSherry (E/M), a trading cost consultant and wholly owned subsidiary of State Street, to monitor the trading costs of SCERS' public equity and fixed income managers, whose assets are held at the custodian, State Street (commingled fund trading costs are not covered by E/M). This report will summarize the key details of the Transaction Cost Analysis reports from E/M. The E/M reports analyze costs across both explicit and implicit costs, including commission trading costs, fees, and market impact costs<sup>1</sup>. As detailed below, across all asset classes, SCERS' trading costs generated a net savings versus E/M benchmark costs of \$1.5 million for the fourth quarter 2021. Summary versions of the reports are included as attachments, with expanded reports available upon request. The summary notes below are categorized by asset class for the quarter. Comments below are summarized at a high level by asset class, and specific manager issues, if any, will be noted in compliance with SCERS' Transaction Cost Analysis policy.

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<sup>1</sup> Market Impact Costs measure the difference between a manager's trade price and a market benchmark, such as the volume weighted average price (VWAP).

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Fourth Quarter 2021

- U.S. Equity ([E/M Summary Report](#))
  - SCERS' total trading cost was +1.34 cents per share (cps)<sup>2</sup>, which was 2.71 cps lower than the E/M benchmark costs of +4.04 cps<sup>3</sup>.
  - SCERS' U.S. equity managers outperformed on both commissions (+1.02 cps) and market impact (+0.31 cps) versus the benchmark costs of +1.71 cps and +2.34 cps, respectively.
  - As measured in basis points (bp), SCERS' total trading cost was +1.83 bp, which was 3.70 bp lower than the E/M benchmark costs of +5.53 bp.
  - Based on 3.4 million shares traded during the quarter (\$250 million principal), SCERS' U.S. equity managers produced savings of approximately \$92,000 compared to E/M benchmark costs.
  - All of SCERS' U.S. equity managers outperformed the benchmark for market impact during the quarter, as measured by full day VWAP, with the exception of Eagle Capital. This is the second consecutive quarter that Eagle has underperformed the benchmark, after being in the top quartile during the first two quarters of the year. SCERS will continue to monitor the trading results for Eagle and follow up with any concerns.
  
- Global Equity ([E/M Summary Report](#))
  - SCERS' total global equity trading costs were +9.43 basis points (bp), 12.22 basis points lower than the E/M benchmark costs of +21.65 bp.
  - SCERS' equity managers generated market impact savings of -1.14 bps, which was better than market impact costs of +1.57 for the benchmark (2.71 bps better than the benchmark), as measured by the full day VWAP.
  - SCERS' commission costs (+6.46 bp) were significantly lower than benchmark costs (+16.33 bp), while costs for fees (+4.11 bp) were slightly higher than the benchmark (+3.75).
  - Total principal traded was \$92 million across 19 countries, resulting in a savings of approximately \$112,000 compared to E/M benchmark costs.
  - No manager specific issues were noted, with all managers delivering cost savings versus E/M benchmarks in every quarter over the past year.
  
- U.S. Fixed Income ([E/M Summary Report](#))
  - SCERS' U.S. Fixed Income trade costs were +0.56 basis points during the quarter, significantly below the E/M benchmark costs of +7.64 bp.
  - Total trade volume was approximately \$1.63 billion in principal, with 898 trades executed across 162 different securities.
  - The trade costs versus the benchmark represented a savings of approximately \$1.2 million versus average benchmark costs.

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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.

<sup>3</sup> Difference between SCERS' trading costs and benchmark costs may not equal due to rounding.

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- Trade costs were lower than the benchmark across all security types traded during the quarter, with significant savings generated in trading of government, mortgage, and corporate bonds.
  - No manager specific issues were noted.
  - Global Fixed Income ([E/M Summary Report](#))
    - SCERS' Global Fixed Income trade savings were -3.35 bp, which was 10.54 bp lower than the benchmark costs of +7.19 bp.
    - Trade volume during the quarter was approximately \$99.6 million, with 147 trades executed across 64 different securities.
    - Trade costs versus the benchmark resulted in cost savings of approximately \$105,000 compared to average benchmark costs.
    - No manager specific issues were noted. SCERS' global fixed income manager (Prudential) has delivered significant cost savings versus the E/M benchmark in every quarter over the past year.
  - Commission Recapture
    - For the fourth quarter 2021, SCERS received a rebate of \$3,228, which represents approximately 51% of the commissions generated during the quarter.
    - For the year ended December 2021, SCERS received a rebate of \$18,726, which was 52% of the commissions generated through the commission recapture program.
    - The full year rebate earned in 2021 through the commission recapture program (\$18,728) was down 27% from the rebate earned in 2020 (\$25,768).
    - 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.

## **ATTACHMENTS**

- Board Order
- Elkins / McSherry Trading Cost Summary reports for the quarter ending December 31, 2021, for U.S. equity, international equity, U.S. fixed income, and global fixed income.

Prepared by:

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Brian Miller  
Senior Investment Officer

Reviewed by:

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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  
February 16, 2022

AGENDA ITEM:

### Trading Cost Analysis Report – Fourth Quarter 2021

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

I HEREBY CERTIFY that the above order was passed and adopted on February 16, 2022 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 December 31, 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 October 1, 2021 to December 31, 2021. The analysis included trading of 3,409,560 shares representing \$249.66 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 +1.02 cps (+1.40 bp) or +\$34,929 (0.68 cps (0.93 bp) better than the Elkins/McSherry All Trading Universe)</li> </ul>	<ul style="list-style-type: none"> <li>Your market impact cost was +0.31 cps (+0.43 bp) or 2.03 cps (2.77 bp) better than the Elkins/McSherry Universe</li> <li>Your overall trading cost of +1.34 cps (+1.83 bp) was 2.71 cps (3.70 bp) better than the Elkins/McSherry Universe</li> <li>Full Day VWAP Universe Rank: 73%</li> <li>Total Cost Universe Rank: 78%</li> </ul>	<ul style="list-style-type: none"> <li>E-Score : 0.00</li> </ul>

#### ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)	
Bundled	All Trading	Execution Only	Program	Median	Full Day VWAP
+3.32	+1.71	+1.42	+1.62	75 %	+2.34
				25 %	+0.09
					+4.64



(+) = Cost

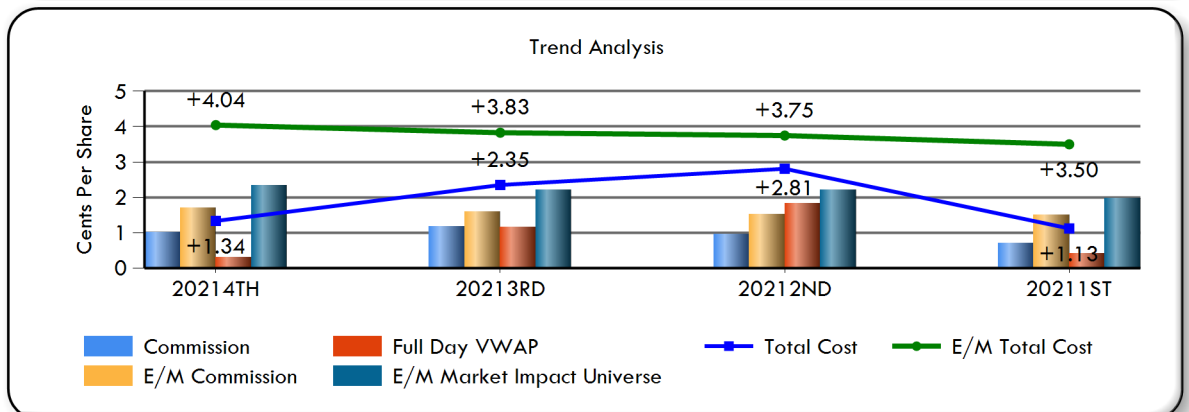
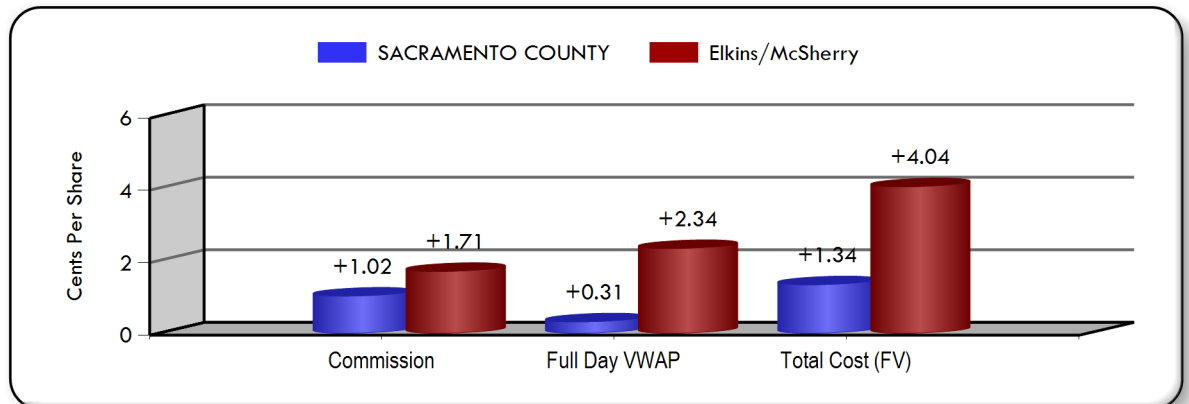
**EXECUTIVE SUMMARY**

**TOTAL PORTFOLIO COST PERFORMANCE**

Side	COMMISSION			MARKET IMPACT		Total Cost	Total Cost/Savings Vs. Universe	E -Score
	Your Avg. Commission (cps)	All Trading Universe (cps)	Bundled Universe (cps)	Full Day VWAP (cps)	Universe Full Day VWAP (cps)	(cps)	Commission+ Full Day VWAP (cps)	
Sells	+1.02	+1.71	+3.32	+1.36	+2.34	+2.38	1.66	0.01
Buys	+1.03	+1.71	+3.32	0.60	+2.34	+0.43	3.61	-0.01
Total	+1.02	+1.71	+3.32	+0.31	+2.34	+1.34	2.71	0.00

**TRADING COMPONENTS**

	Buys	Sells
Trade Principal	125,484,860	124,172,869
Shares	1,824,963	1,584,597
Unique Names	923	391
Liquidity (% ADV)	0.029	0.044
Avg. Execution Size	1,001	1,795
Avg. Order Completion Time (min)	N/A	N/A
Total Number of Trades	1,824	883





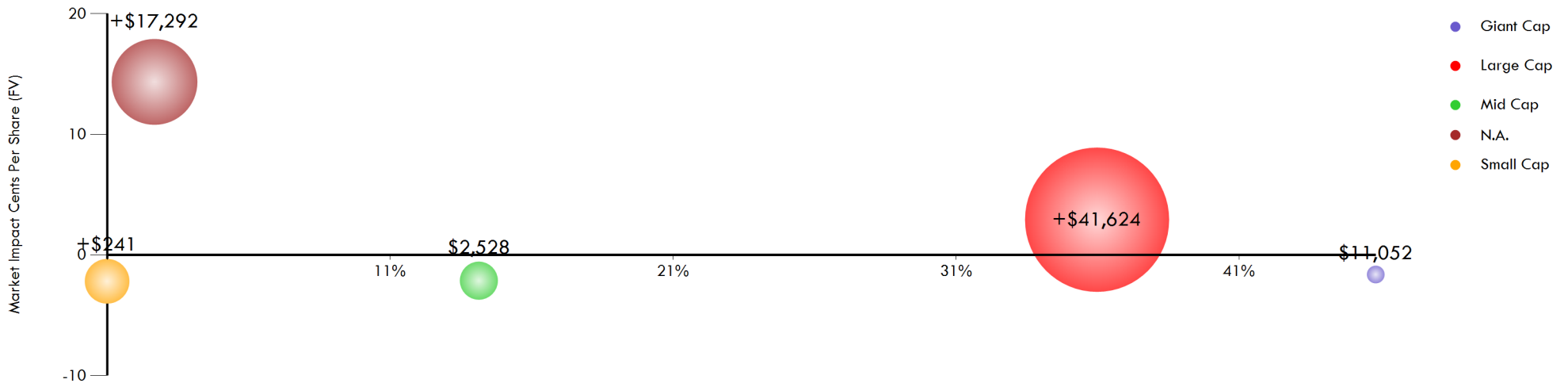
(+) = Cost

**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	45.90 %	1,396	+0.65	+1.71	1.64	+3.76	75 %	0.99	6.46	-0.01	Over \$25 B
Large Cap	36.06 %	1,093	+0.60	+1.71	+2.91	+2.67	47 %	+3.51	0.86	0.01	\$5 B To \$25 B
Mid Cap	14.21 %	1,330	+1.84	+1.71	2.15	+1.55	85 %	0.31	3.56	0.01	\$1 B To \$5 B
N.A.	2.75 %	1,978	+1.26	+1.71	+14.35	+2.34	1 %	+15.61	+11.57	0.00	
Small Cap	1.08 %	1,180	+2.33	+1.71	2.20	+0.88	85 %	+0.14	2.45	0.00	\$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	20213RD (%)	20212ND (%)	20211ST (%)
AQR	151	2,274	2,023,957	0.02	+0.07	+1.71	+0.78	67 %	3.20	72	70	50
WEATHERBIE	52	1,302	845,245	0.00	+2.74	+1.71	0.27	78 %	1.57	60	5	95
EAGLE CAPITAL MANAGE	24	13,907	250,324	0.03	+2.91	+1.71	+5.05	23 %	+3.92	4	87	99
ALLIANCE R 3000 CAPI	17	191	193,149	-0.03	+0.47	+1.71	8.70	96 %	12.27	83	71	1
SNYDER CAPITAL	6	702	96,885	0.03	+2.27	+1.71	+1.34	61 %	0.44	71	53	-

**ELKINS/MCSHERRY UNIVERSE VALUES**

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.32	+1.71	+1.42	+1.62	+2.34

**NOTES**

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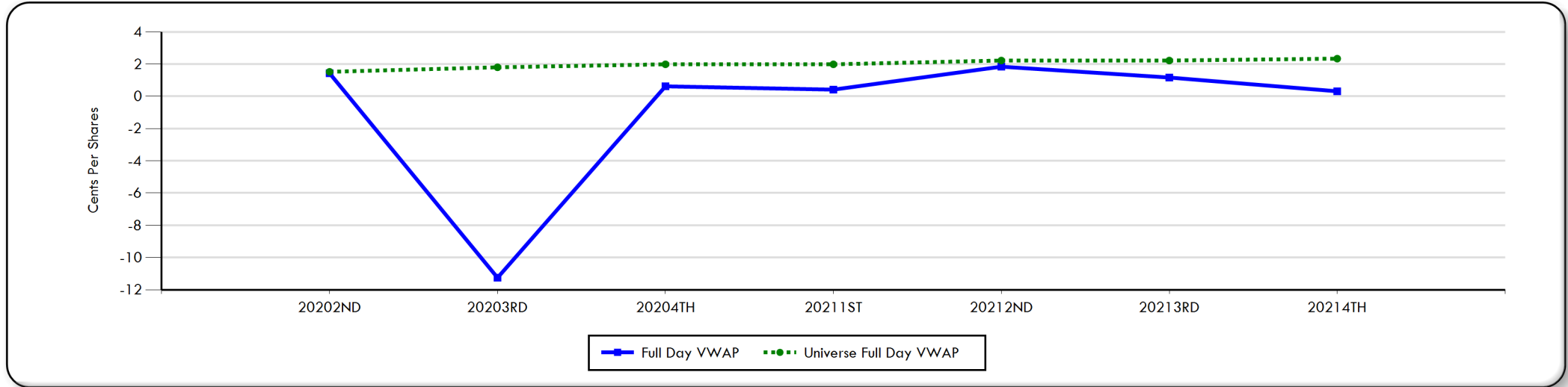


(+) = Cost

**TRADE HISTORY**

**Trade History**

Period	Total Shares	Total Dollars Traded	Commission		Full Day VWAP (cps)	Full Day VWAP Universe Rank (%)
			(cps)	(\$)		
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
20213RD	3,421,487	239,340,867	+1.19	40,598	+1.17	63
20214TH	3,409,560	249,657,729	+1.02	34,929	+0.31	73



**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 December 31, 2021





(+) = Cost

## EXECUTIVE SUMMARY

Elkins/McSherry has been providing trading cost analysis to institutional investors since 1991, serving many of the world's largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an unmatched 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 October 1, 2021 to December 31, 2021. The analysis included trading of 7,286,577 shares representing \$92.01 million in principal across 19 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 +6.46 bp or \$ +\$59,432 (9.87 bp better than the Elkins/McSherry Universe)</li> </ul>	<ul style="list-style-type: none"> <li>Your fee cost was +4.11 bp or \$ +37,824 (+0.37 bp worse than the Elkins/McSherry Universe)</li> </ul>	<ul style="list-style-type: none"> <li>Your market impact savings was 1.14 bp or \$10,502 (2.71 bp better than the Elkins/McSherry Universe)</li> <li>Your overall trading cost of +9.43 bp was 12.22 bp better than the Elkins/McSherry Universe.</li> <li>Sacramento County trading was higher than the Elkins/McSherry Universe in 5 countries and lower than the Elkins/McSherry Universe in 15 countries.</li> <li>12 of your brokers had trading cost higher than summary universe of countries (principal weighted) in which they traded. 25 of your brokers had lower trading cost.</li> </ul>	<ul style="list-style-type: none"> <li>E - Score : 0.00</li> </ul>

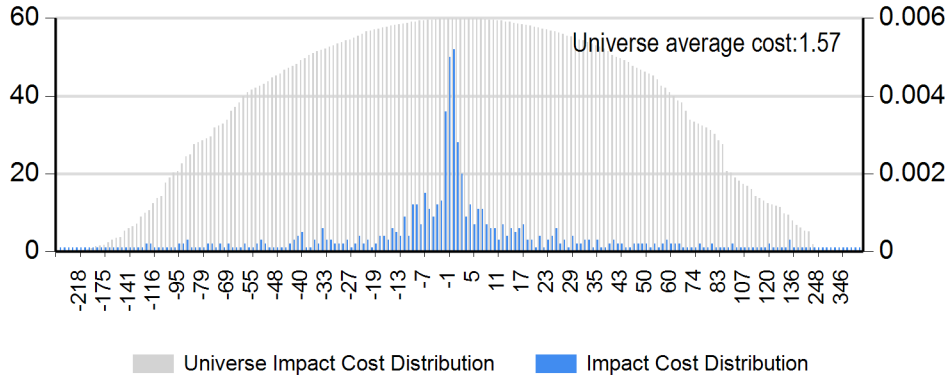




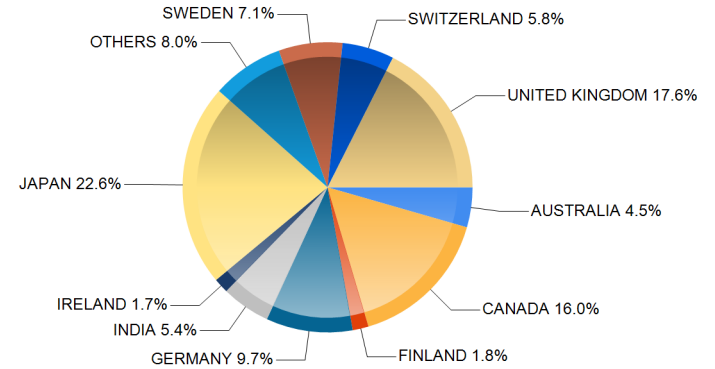
(+) = Cost

**EXECUTIVE SUMMARY**

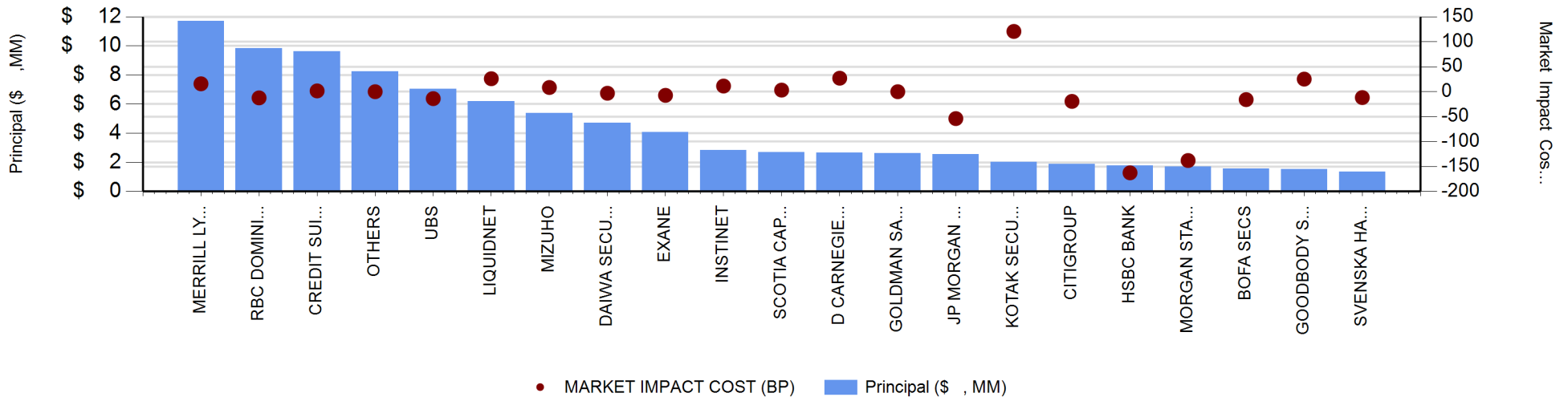
**Cost Distribution**



**Principal Across Country**



**Top 20 Brokers in Principal Traded**







(+) = Cost

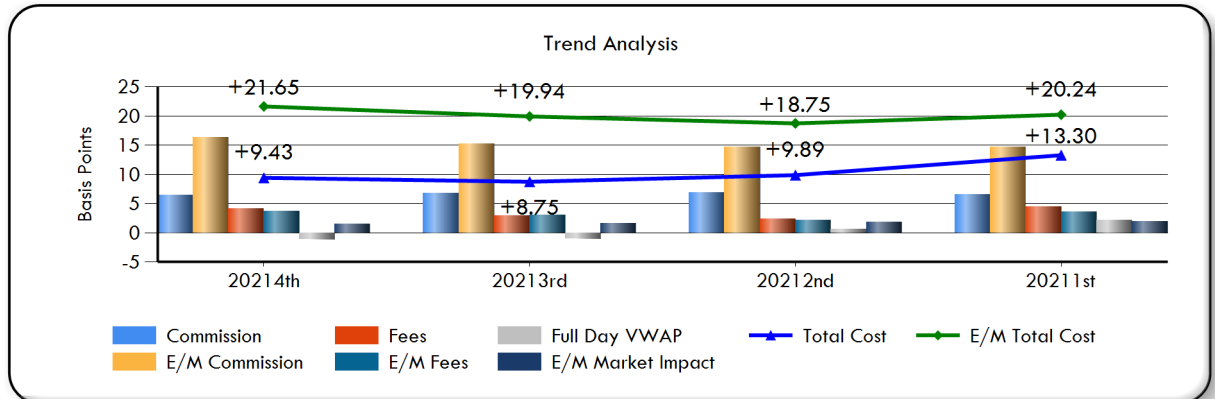
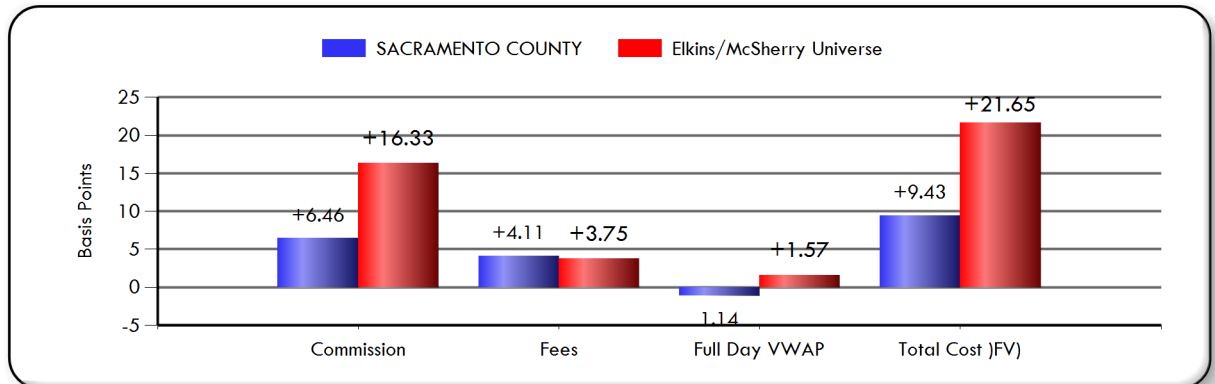
**EXECUTIVE SUMMARY**

**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	+6.84	+17.34	+3.92	+0.61	+0.65	4.06	+1.92	+3.39	16.53	-0.11
Buy	+6.00	+15.13	+3.84	+8.28	+7.43	+2.34	+1.16	+16.62	7.10	0.14
<b>Total</b>	<b>+6.46</b>	<b>+16.33</b>	<b>+3.88</b>	<b>+4.11</b>	<b>+3.75</b>	<b>1.14</b>	<b>+1.57</b>	<b>+9.43</b>	<b>12.22</b>	<b>0.00</b>

**TRADING COMPONENTS**

	Buys	Sells
Trade Principal	41,982,995	50,028,721
Shares	2,577,592	4,708,985
Unique Names	41	35
Liquidity (% POV)	0.232	0.404
Avg. Order Size	7,160	13,973
Avg. Order Completion Time (min)	N/A	N/A
Total Number of Trades	360	337



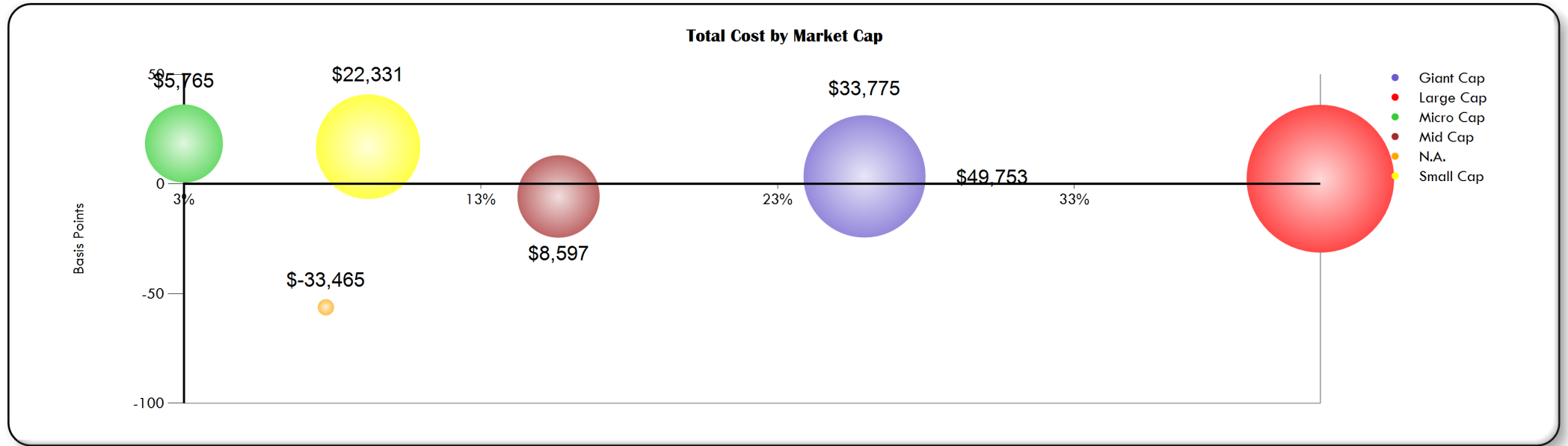


(+) = Cost

**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	40.82 %	186,860	+5.93	+16.53	+2.42	+1.59	+13.25	9.54	0.00	\$5 Billion To \$25 Billion
Giant Cap	25.46 %	236,631	+7.15	+17.37	+3.49	+1.96	+14.42	7.76	0.01	Over \$25 Billion
Mid Cap	15.15 %	118,124	+6.79	+16.31	5.68	+1.38	+6.17	15.80	0.06	\$1 Billion To \$5 Billion
Small Cap	8.73 %	41,198	+6.80	+14.50	+17.04	+1.23	+27.79	+7.07	0.19	\$250 Million To \$1 Billion
N.A.	7.31 %	101,943	+5.92	+14.77	56.25	+1.12	49.74	66.06	-0.54	
Micro Cap	2.53 %	129,209	+6.34	+13.67	+18.48	+1.10	+24.82	+10.04	0.47	Under \$250 Million





(+) = Cost

**TRADE CYCLE DETAIL**

**MANAGER PERFORMANCE (FULL DAY VWAP)**



Manager	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION		MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	2021 3rd (bp)	2021 2nd (bp)	2021 1st (bp)
LSV ASSET MANAGEMENT	36	412	38.71%	86,452	-0.01	+4.39	+16.75	0.82	+1.34	14.85	0.18	3.65	3.72
LAZARD ASSET MANAGEM	31	134	33.25%	228,319	0.08	+7.98	+15.61	+8.02	+1.77	0.21	19.93	16.82	5.88
WILLIAM BLAIR & COMP	20	133	21.42%	148,176	-0.10	+7.77	+14.57	14.86	+0.95	22.13	13.36	8.33	10.89
WALTER SCOTT INTL EA	6	18	6.62%	338,406	-0.04	+6.68	+23.19	4.59	+3.96	25.03	7.59	5.34	5.08

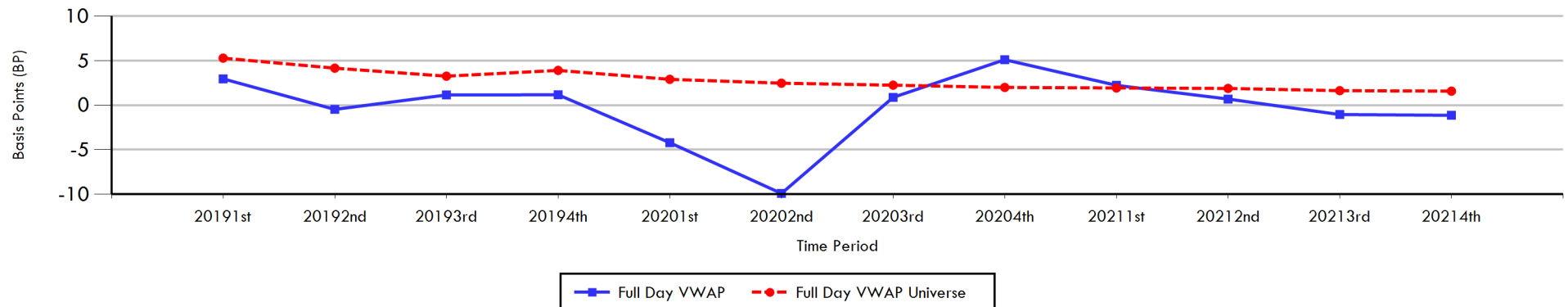
**NOTES**

- Manager above made up 100.00 % of principal traded.

### TRADE HISTORY

Period	Total Principal (\$)	Commission (bp)	Commission Universe (bp)	Fees (bp)	Fees Universe (bp)	Full Day VWAP (bp)	Full Day VWAP Universe (bp)	Total Cost/Savings Vs. Universe (bp)
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
20213rd	128,819,762	+6.84	+15.28	+2.96	+3.03	1.05	+1.62	11.19
20214th	92,011,716	+6.46	+16.33	+4.11	+3.75	1.14	+1.57	12.22

TRADE HISTORY







## SACRAMENTO COUNTY

US Fixed Income Analysis

Period End December 31, 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 October 01,2021 to December 31,2021. The analysis included trading of 898 trades in 162 different issues representing \$1,629,685,712 in principal across mortgages, governments And corporates.

### 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.

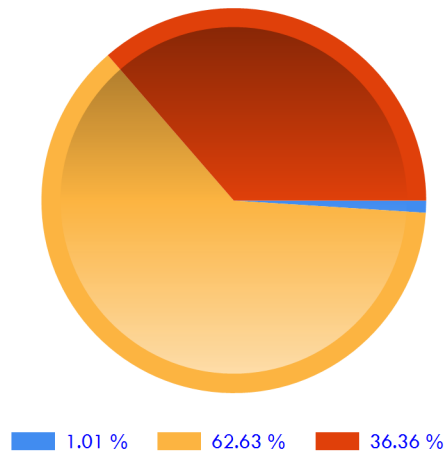
### Results:

GRAND TOTAL PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE				
Buy/Sell	Principal (Mil. \$ )	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP	Q3 2021	Q2 2021	Q1 2021	Q4 2020
BUYS	793	428	103	+313.50	+3.95	+8.44	356.08	4.49	0.80	1.76	0.34	2.83
SELLS	836	470	98	221.83	2.65	+6.88	797.15	9.53	+1.25	+1.93	+1.22	1.07
GRAND TOTAL	1,630	898	162	+91.67	+0.56	+7.64	1,153.23	7.08	+0.25	+0.07	+0.40	2.02

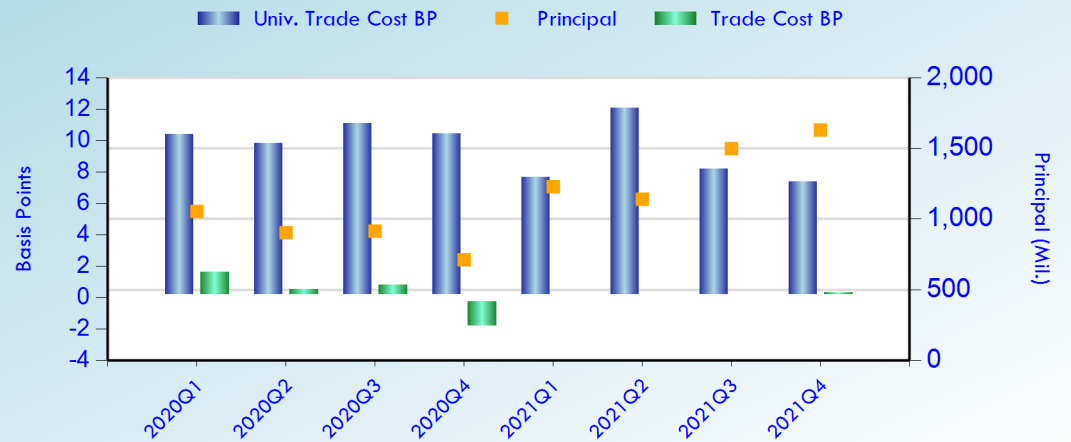
EXECUTIVE SUMMARY

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	Q3 2021	Q2 2021	Q1 2021	Q4 2020
Governments	1,015	535	89	+81.47	+0.80	+7.65	694.63 6.85	+0.17	+0.12	+1.54	0.65
Mortgages	591	308	28	+17.84	+0.30	+7.45	422.41 7.15	+0.13	+0.11	1.06	13.38
Corporates	24	55	45	7.65	3.22	+12.01	36.19 15.23	+4.68	2.05	+0.15	+6.66

Bonds by Principal Traded



Historical Trade Cost Trend



**Manager PERFORMANCE**

Manager PERFORMANCE									TRADE COST HISTORICAL PERFORMANCE			
Manager	Principal (Mil. \$ )	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP		Q3 2021	Q2 2021	Q1 2021	Q4 2020
METROPOLITAN WEST MG	1,211	804	110	+99.21	+0.82	+7.61	822.39	6.79	+0.00	0.04	+0.13	2.40
NEUBERGER BERMAN	395	67	39	14.92	0.38	+7.73	320.06	8.11	+0.09	+0.31	+3.27	1.45
BARCLAYS 1-10 YR TIP	24	27	21	+7.38	+3.04	+7.48	10.77	4.44	+7.20	+2.08	1.53	+3.68

### HISTORICAL DATA

Quarter	Principal (Thous. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
10/01/2021-12/31/2021	1,629,686	898	162	+91.67	+0.56	+7.64	1,153.23	7.08
07/01/2021-09/30/2021	1,498,166	784	166	+37.36	+0.25	+8.43	1,226.02	8.18
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	5,497,148	3169		+187.08	+0.34	+8.88	4,696.76	8.54
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





## SACRAMENTO COUNTY

Global Fixed Income Analysis

Period End December 31, 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 October 01,2021 to December 31,2021. The analysis included trading of 147 trades in 64 different issues representing \$99,581,598 in principal across 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.

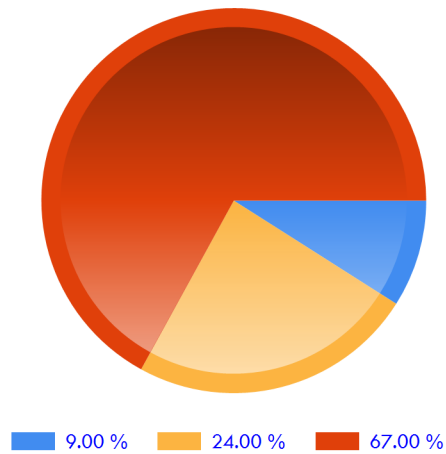
### Results:

GRAND TOTAL PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE				
Buy/Sell	Principal (Mil. \$ )	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP	Q3 2021	Q2 2021	Q1 2021	Q4 2020
BUYS	54	80	41	1.97	0.36	+7.19	40.86	7.55	+2.41	1.71	7.15	+19.81
SELLS	45	67	31	31.38	6.90	+7.19	64.09	14.09	+0.09	+3.27	+8.06	+8.92
GRAND TOTAL	100	147	64	33.35	3.35	+7.19	104.95	10.54	+1.58	+0.07	+1.04	+13.57

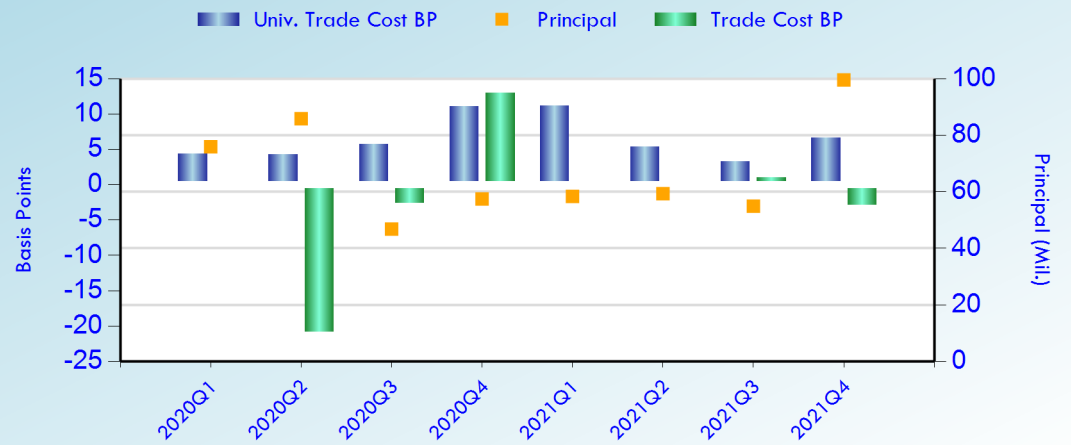
EXECUTIVE SUMMARY

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	Q3 2021	Q2 2021	Q1 2021	Q4 2020
Mortgages	66	63	15	11.36	1.71	+7.19	59.09 8.90	0.88	+4.05	1.38	+162.55
Governments	24	36	19	15.10	6.21	+7.19	32.58 13.40	+2.22	3.12	0.87	+1.22
Corporates	9	48	30	6.89	7.75	+7.19	13.28 14.94	+1.72	+7.89	+4.48	3.32

Bonds by Principal Traded



Historical Trade Cost Trend



**Manager PERFORMANCE**

Manager PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE			
Manager	Principal (Mil. \$ )	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP	Q3 2021	Q2 2021	Q1 2021	Q4 2020
PRUDENTIAL INVESTMEN	100	147	64	33.35	3.35	+7.19	104.95 10.54	+1.58	+0.07	+1.04	+13.57

### HISTORICAL DATA

Quarter	Principal (Thous. \$)	No. of Trades	No. of Issues	Trade Cost		Univ. Trade Cost BP	Cost Diff. from Universe	
				(Thous. \$)	BP		(Thous. \$)	BP
10/01/2021-12/31/2021	99,582	147	64	33.35	3.35	+7.19	104.95	10.54
07/01/2021-09/30/2021	54,920	94	62	+8.68	+1.58	+3.84	12.40	2.26
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	272,210	538		18.15	0.67	+7.21	214.34	7.87
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