

November 16, 2018



**NDSIB Fee Study:
Fiscal Year 2018**

Pension Trust, Insurance Trust,
and Legacy Fund

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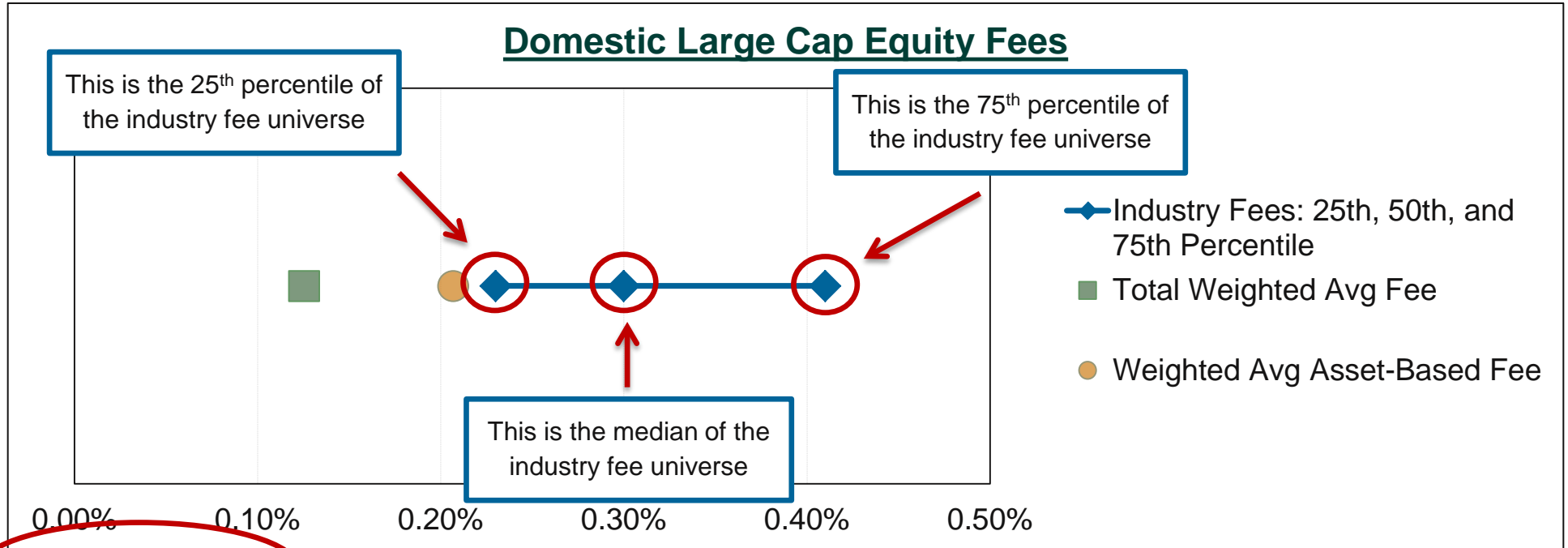
Summary Notes and Comments on 2018 Fee Study

NDSIB – Pension Trust, Insurance Trust, and Legacy Fund

- All market values and fee data are as of the fiscal year ending June 30, 2018.
- Investment managers employ three primary fee calculation methods to charge for their services;
 - **Asset-Based Fees:** fees are calculated as a percentage of assets under management
 - **Performance-Based Fees:** fees are calculated on outperformance relative to a pre-specified benchmark during a contracted measurement period
 - **Hybrid Fees:** A combination of an asset-based fee and a performance-based fee schedule
- Fees are calculated as weighted averages in three different ways within the asset classes:
 - **Weighted Average Asset-based Fee:** calculated using only managers that employ an asset-based fee schedule
 - **Weighted Average Performance / Hybrid Fee:** calculated using only managers that employ a performance or hybrid fee schedule
 - **Total Weighted Average Fee:** calculated across all managers in the asset class
- Regardless of the method used by a particular manager, Callan calculated fees as a percentage of assets under management for each manager for the purposes of comparison.
- In many instances, fees paid by the individual trusts benefit from fee schedules that account for the aggregate level of assets invested with a particular manager or in a specific strategy.
- Fee universes used in the study reflect either:
 - **Actual Fees** paid by Callan survey respondents who invest in similar mandates,
 - **Published Fees** calculated using a universe of manager fee schedules for similar mandates, or;
 - An **Average of Actual and Published Fee** universes. This method was employed where the Actual Fee universe was smaller than 30.
- All fee universes are explicitly noted beneath each chart where “n=” will denote the applicable sample size.
- Greater detail on fee measurements and data are available on the last page of the report.

Sample Chart

Explanatory Slide



N=61, Actual Fee Universe

This illustrates the number of constituents and the type of fee that was surveyed to create the sample universe

Sample Table

Explanatory Slide

Domestic Large Cap Equity		
Managers with asset-based fees	{	Asset-Based Fee Strategies Fee %
		L.A. Capital Growth 0.21%
		Weighted Average Asset-Based Fee 0.21%
Managers with performance and hybrid Fees	{	Performance and Hybrid Fee Strategies Fee %
		L.A. Capital Enhanced Index 0.21%
		Northern Trust Enhanced S&P 500 0.00%
		Clifton Enhanced S&P 500 0.00%
		Weighted Average Performance and Hybrid Fee 0.07%
		Total Weighted Average U.S. Lg Cap Fee 0.13%
Industry fee distribution	{	Industry Fee - 25th Percentile 0.23%
		Industry Fee - Median 0.30%
		Industry Fee - 75th Percentile 0.41%

N=61, Actual Fee Universe

This is the weighted average fee rate paid to managers with an asset-based fee

This is the weighted average fee rate paid to managers with a performance / hybrid based fee

This is the weighted average fee rate paid to all managers

Callan

Pension Trust

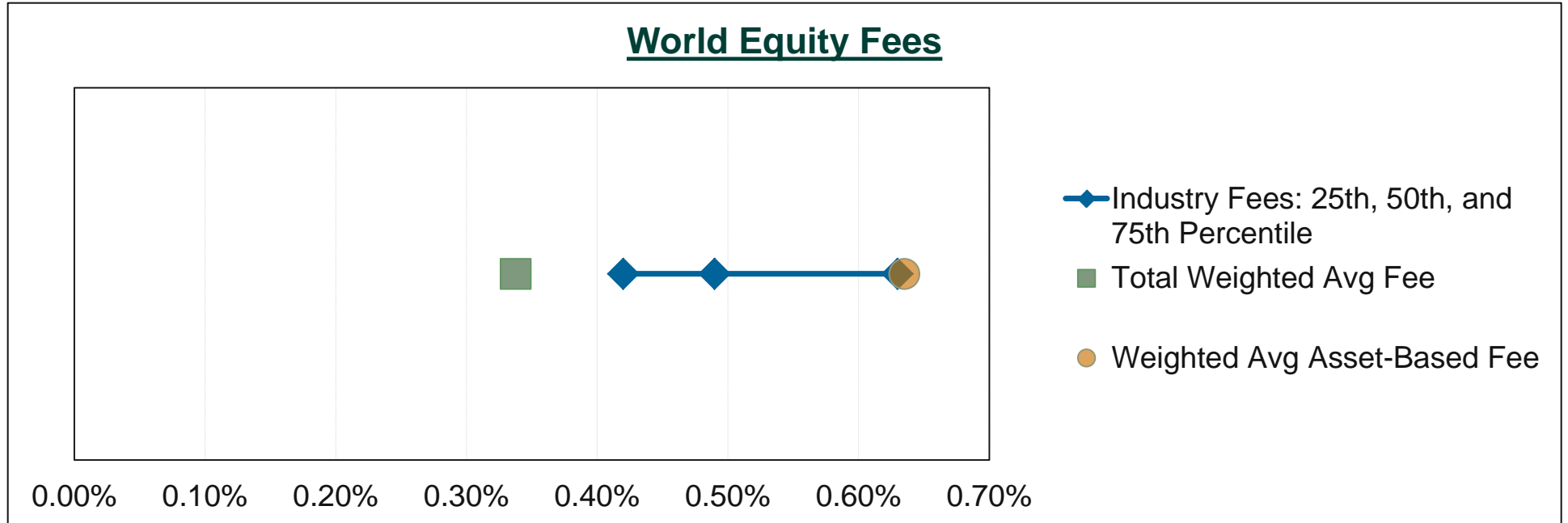
Pension Trust

NDSIB Fee Study Fiscal Year 2018 Executive Summary

- Total Equity manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
 - Total Global Equity fees fell below the 25th percentile of the industry universe, helped in part by performance/hybrid fee based strategies
 - Total Domestic Large Cap Equity asset-based and performance/hybrid fee strategies were below the 25th percentile of the industry universe
 - Total Small Cap Equity fees were close to the 25th percentile with asset-based fees falling above the 75th percentile
 - Developed International Equity fees were below the 25th percentile and represented only asset-based fee strategies
 - Emerging Market Equity fees fell just above median and represented only asset-based fee strategies
- Total Fixed Income manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
 - Total Investment Grade Fixed Income fees paid were above the 75th percentile, driven largely by performance/hybrid fee based strategies
 - Total Below Investment Grade Fixed Income fees paid were above the 75th percentile, driven largely by performance/hybrid fee based strategies
 - Total International Fixed Income fees paid were below the 25th percentile of industry averages and represented only asset-based fee strategies
- Total Real Estate manager fees paid represented a mix of asset-based and performance/hybrid fee strategies. Asset based fee strategies fell well below the 25th percentile with performance/hybrid fee strategies pushing the total fees paid just above the 75th percentile.
- Total Real Assets represents a variety of inflation-sensitive strategies including Timber and Infrastructure. Due to the custom nature of these strategies, no applicable manager fee distribution is available.
 - Fee structures do however appear to follow industry norms and standards
- Private Equity represents a variety of strategies and investment vehicles that cannot produce a reasonable industry fee universe for comparison.
 - Fee structures do however appear to follow industry norms and standards

World Equity

Pension Trust



N=648, Average of Actual Fee Universe (N=28) and Published Fee Universe (N=620)

- World equity managers invest in stocks traded in both U.S. and non-U.S. markets.
- North Dakota's average World Equity account size for FY 2018 was \$470mm
- The orange circle represents North Dakota's World Equity weighted average asset-based management fee of 0.64%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.34%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$300mm and \$2bn

World Equity

Pension Trust

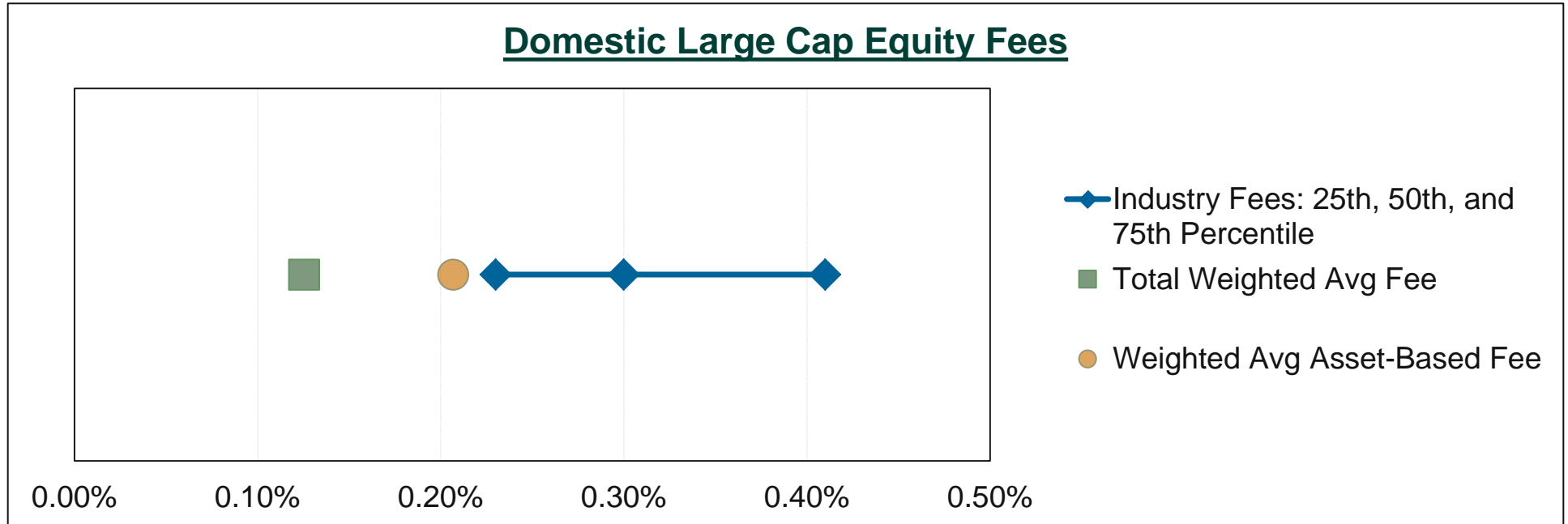
World Equity	
Asset-Based Fee Strategies	Fee %
EPOCH Inv. Partners	0.64%
Weighted Average Asset-Based Fee	0.64%
Performance and Hybrid Fee Strategies	Fee %
LSV Asset Management	0.10%
Weighted Average Performance & Hybrid Fee	0.10%
Total Weighted Average World Equity Fee	0.34%
Industry Fee - 25th Percentile	0.42%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.63%

N=648, Average of Actual Fee Universe (N=28) and Published Fee Universe (N=620)

- During the 2018 FY, the World Equity portfolio fees were below those of industry peers. This is largely attributable to the hybrid fee structure of LSV Asset Management.
 - Performance fees are paid to the fund on excess return against the index; however, LSV underperformed the MSCI ACWI by 3.33 percentage points on a gross basis in FY 2018.
 - *LSV charges a flat fee of 0.10% on assets under management plus 25% of the net outperformance relative to its benchmark with totals fees capped at 0.85%.*

Domestic Large Cap Equity

Pension Trust



N=61, Actual Fee Universe

- Domestic Large Cap Equity managers invest in large company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Large Cap Equity account size for FY 2018 was \$243mm
- The orange circle represents North Dakota's Domestic Large Cap Equity weighted average asset-based management fee of 0.21%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.13%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

Domestic Large Cap Equity

Pension Trust

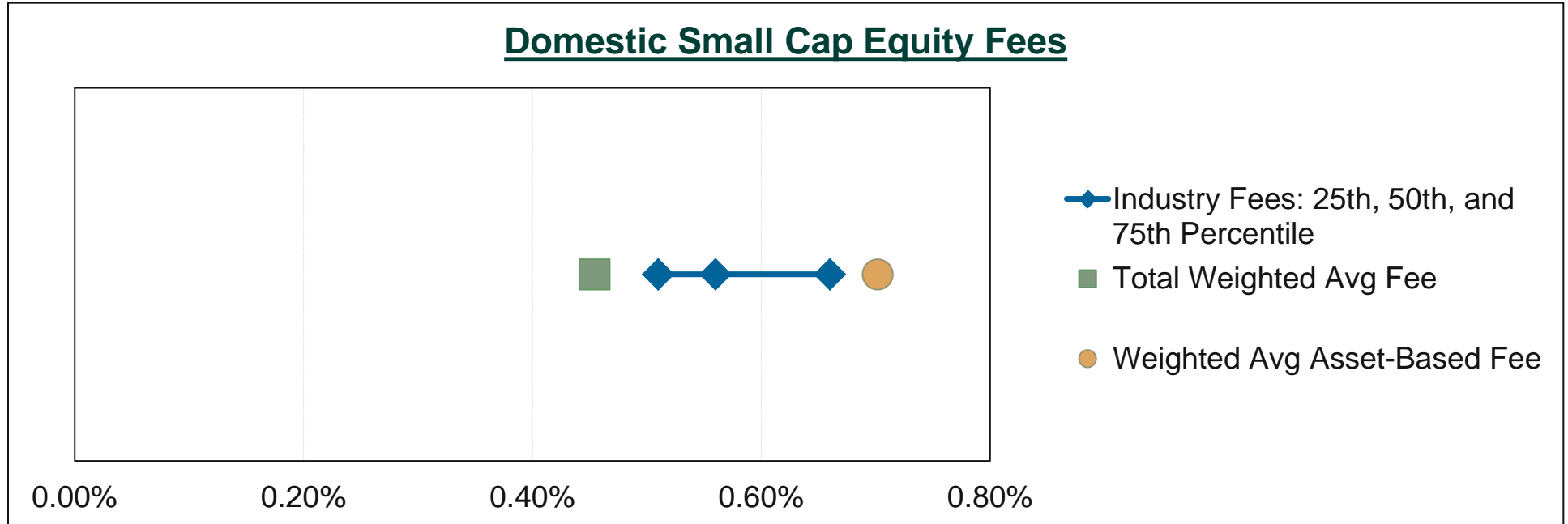
Domestic Large Cap Equity	
Asset-Based Fee Strategies	Fee %
L.A. Capital Growth	0.21%
Weighted Average Asset-Based Fee	0.21%
Performance and Hybrid Fee Strategies	Fee %
L.A. Capital Enhanced Index	0.21%
Northern Trust Enhanced S&P 500	0.00%
Clifton Enhanced S&P 500*	0.00%
Weighted Average Performance and Hybrid Fee	0.07%
Total Weighted Average U.S. Lg Cap Fee	0.13%
Industry Fee - 25th Percentile	0.23%
Industry Fee - Median	0.30%
Industry Fee - 75th Percentile	0.41%

N=61, Actual Fee Universe

- The Domestic Large Cap Equity portfolio employs several managers with performance and hybrid fee structures and is therefore difficult to compare directly to industry averages.
 - L.A. Capital Enhanced Index charges a base management fee on all assets under management. A performance based fee of 20% of returns in excess of the benchmark is charged on approximately 40% of the assets.
 - Northern Trust Enhanced Index charges no base management fee. The only fee charged is 25% of the excess return generated.
 - Parametric Clifton Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated. Fees are paid once a year for performance through June 30.
 - **Note that Clinton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$2.1mm in performance fee credit against future fees.*

Domestic Small Cap Equity

Pension Trust



N=38, Actual Fee Universe

- Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S
- North Dakota's average Domestic Small Cap Equity account size for FY 2018 was \$152mm
- The orange circle represents North Dakota's Domestic Small Cap Equity weighted average asset-based management fee of 0.70%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.45%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

Domestic Small Cap Equity

Pension Trust

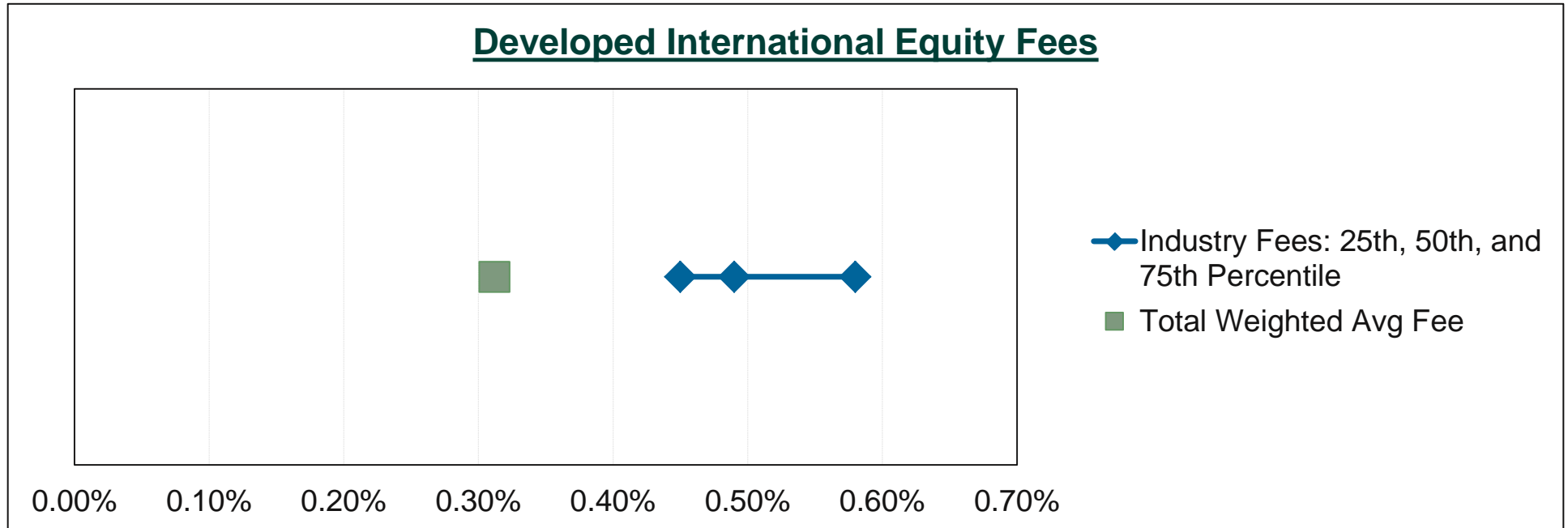
Domestic Small Cap Equity	
Asset-Based Fee Strategies	Fee %
Atlanta Capital	0.70%
Weighted Average Asset-Based Fee	0.70%
Performance and Hybrid Fee Strategies	Fee %
Clifton Enhanced Small Cap	0.22%
Weighted Average Performance and Hybrid Fee	0.22%
Total Weighted Average U.S. Sm Cap Fee	0.45%
Industry Fee - 25th Percentile	0.51%
Industry Fee - Median	0.56%
Industry Fee - 75th Percentile	0.66%

N=38, Actual Fee Universe

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
 - Parametric Clifton Enhanced Small Cap charges no base management fee. The only fee charged is 35% of the excess return generated over the index. Fees are paid once a year for performance through June 30.
- Note that the Asset-Based fee of Atlanta Capital exceeds the 75th percentile of respondents to the Callan 2017 Investment Management Fee Survey.

Developed International Equity

Pension Trust



N=53, Actual Fee Universe

- Developed International Equity managers invest in stocks that trade and gain exposure to developed markets and economies outside of the U.S.
- North Dakota's average Developed International Equity account size for FY 2018 was \$170mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.31%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

Developed International Equity

Pension Trust

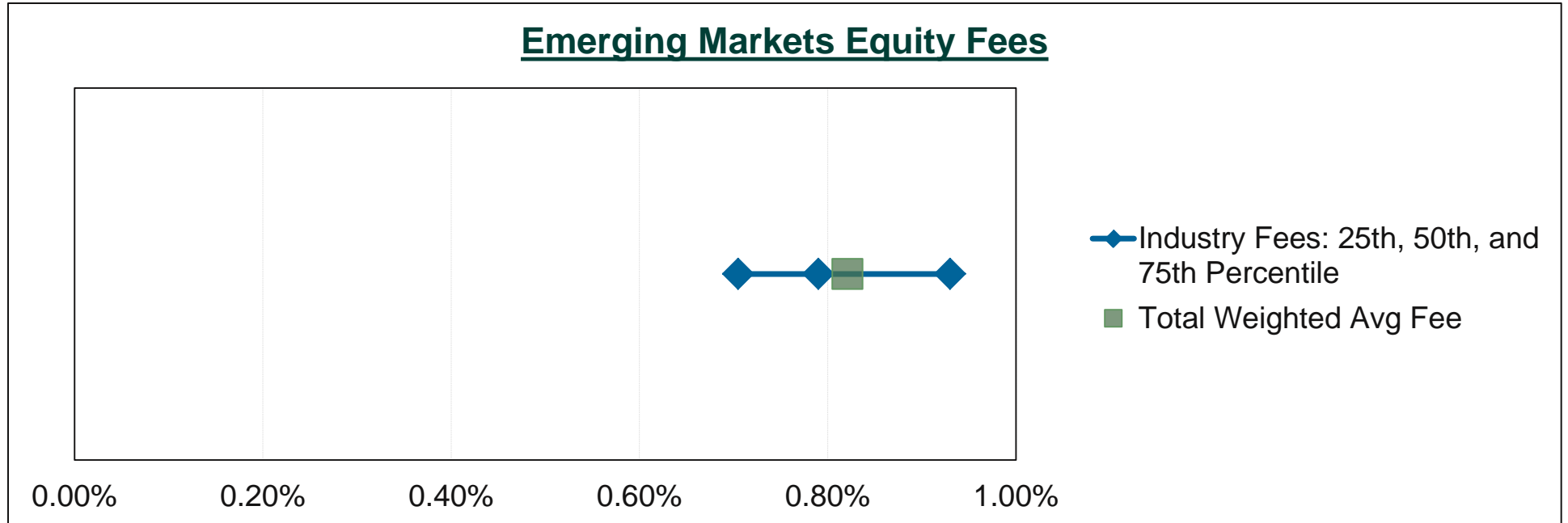
Developed International Equity	
Asset-Based Fee Strategies	Fee %
DFA International Small Cap Value	0.67%
Northern Trust World ex-US	0.03%
Wellington Intl SC Opp	0.86%
William Blair	0.36%
Total Weighted Average Dev. Intl Equity Fee	0.31%
<hr/>	
Industry Fee - 25th Percentile	0.45%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.58%

N=53, Actual Fee Universe

- All managers for this asset class fall into the asset-based fee category.
- The total weighted average fee for the asset class falls well below the industry average for active managers.
 - However, note that Northern Trust is a passive manager and passive strategies tend to charge lower fees than active ones do. The inclusion of Northern Trust therefore skews the weighted average fee below what the weighted average fee would be if the fund was excluded from the group.

Emerging Markets Equity

Pension Trust



N=437, Average of Actual Fee Universe (N=18) and Published Fee Universe (N=419)

- Emerging Markets Equity managers invest in stocks that gain exposure to emerging market economies.
- North Dakota's average Emerging Markets Equity account size for FY 2018 was \$111mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.82%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm

Emerging Markets Equity

Pension Trust

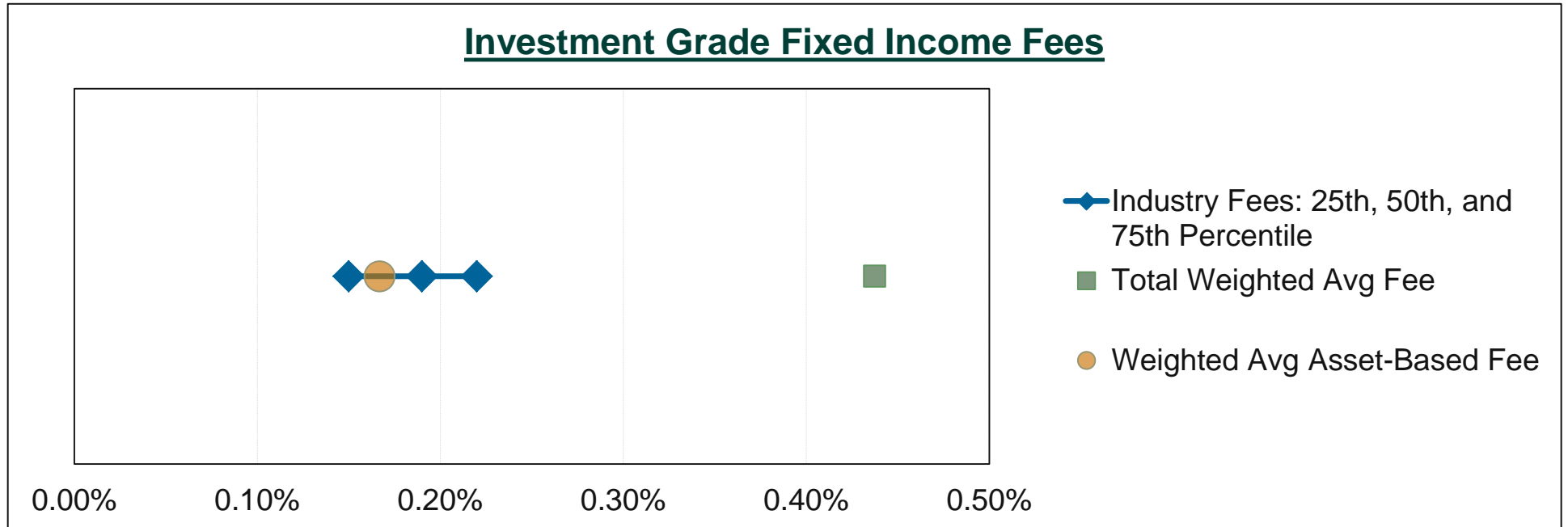
Emerging Markets Equity	
Asset-Based Fee Strategies	Fee %
DFA Emerging	0.69%
Axiom	0.87%
Total Weighted Average EM Equity Fee	0.82%
Industry Fee - 25th Percentile	0.71%
Industry Fee - Median	0.79%
Industry Fee - 75th Percentile	0.93%

N=437, Average of Actual Fee Universe (N=18) and Published Fee Universe (N=419)

- All managers for this asset class fall into the asset-based fee category.
- North Dakota's weighted average fee for the asset class is roughly in line with the median of industry peers.

Investment Grade Fixed Income

Pension Trust



N=39, Actual Fee Universe

- Investment Grade Fixed Income managers invest in bonds and other debt instruments that are rated “investment grade” by rating agencies and/or investment analysts.
- North Dakota's average Investment Grade Fixed Income account size for FY 2018 was \$121mm
- The orange circle represents North Dakota's Investment Grade Fixed Income weighted average asset-based management fee of 0.17%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.44%
- Fee universe was constructed using Callan’s 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm

Investment Grade Fixed Income

Pension Trust

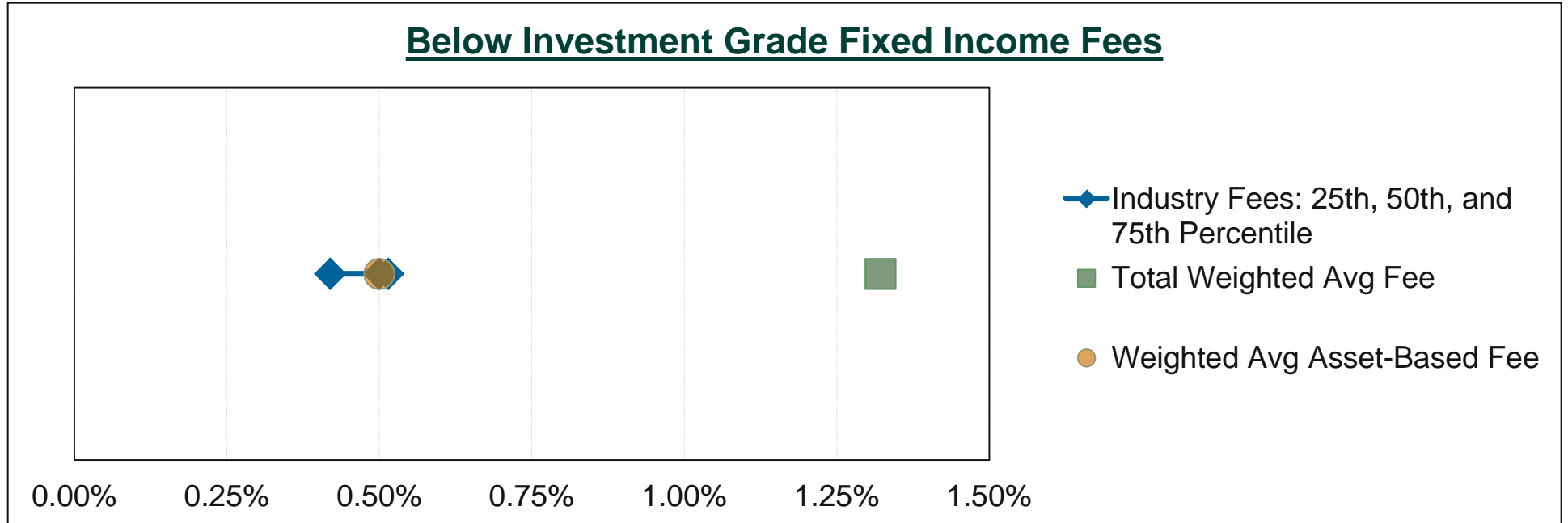
Investment Grade Fixed Income		Investment Grade Fixed Income	
Asset-Based Fee Strategies	Fee %	Performance and Hybrid Fee Strategies	Fee %
Declaration Total Return	0.37%	PIMCO DiSCO II	2.16%
JP Morgan MBS	0.26%	Weighted Average Performance and Hybrid Fee	2.16%
PIMCO MBS	0.23%		
PIMCO Unconstrained	0.14%	Total Weighted Average IG Fixed Income Fee	0.44%
Prudential	0.12%		
SSgA Long U.S. Treasury Index	0.03%	Industry Fee - 25th Percentile	0.15%
Weighted Average Asset-Based Fee	0.17%	Industry Fee - Median	0.19%
		Industry Fee - 75th Percentile	0.22%

N=39, Actual Fee Universe

- Declaration Total Return charges an Asset-Based Fee of 0.60%. 1/12 of the Asset-Based fee is charged monthly. However, fees charged on amounts in excess of \$75mm are rebated back to the Pension Trust on a quarterly basis. This rebate process is a specially negotiated arrangement made necessary by the partnership structure.
- PIMCO DiSCO II charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 15% of the excess return above a variable hurdle rate.
- Note that PIMCO MBS and J.P. Morgan MBS were both fully redeemed during the fiscal year. Assets were redeployed to Prudential, which was a new subscription in the first quarter of 2018. The portfolio's allocation to PIMCO Unconstrained was also increased in the first quarter of 2018.

Below Investment Grade Fixed Income

Pension Trust



N=240, Average of Actual Fee Universe (N=23) and Published Fee Universe (N=217)

- Below Investment Grade (I.G.) Fixed Income managers invest in bonds and other debt instruments that are rated below “investment grade” by rating agencies and/or investment analysts.
- North Dakota's average Below Investment Grade Fixed Income account size for FY 2018 was \$58mm
- The orange circle represents North Dakota's Below Investment Grade Fixed Income weighted average asset-based management fee of 0.5%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 1.32%
- Fee universe was constructed using Callan’s 2017 Investment Management Fee Survey for mandate sizes below \$200mm

Below Investment Grade Fixed Income

Pension Trust

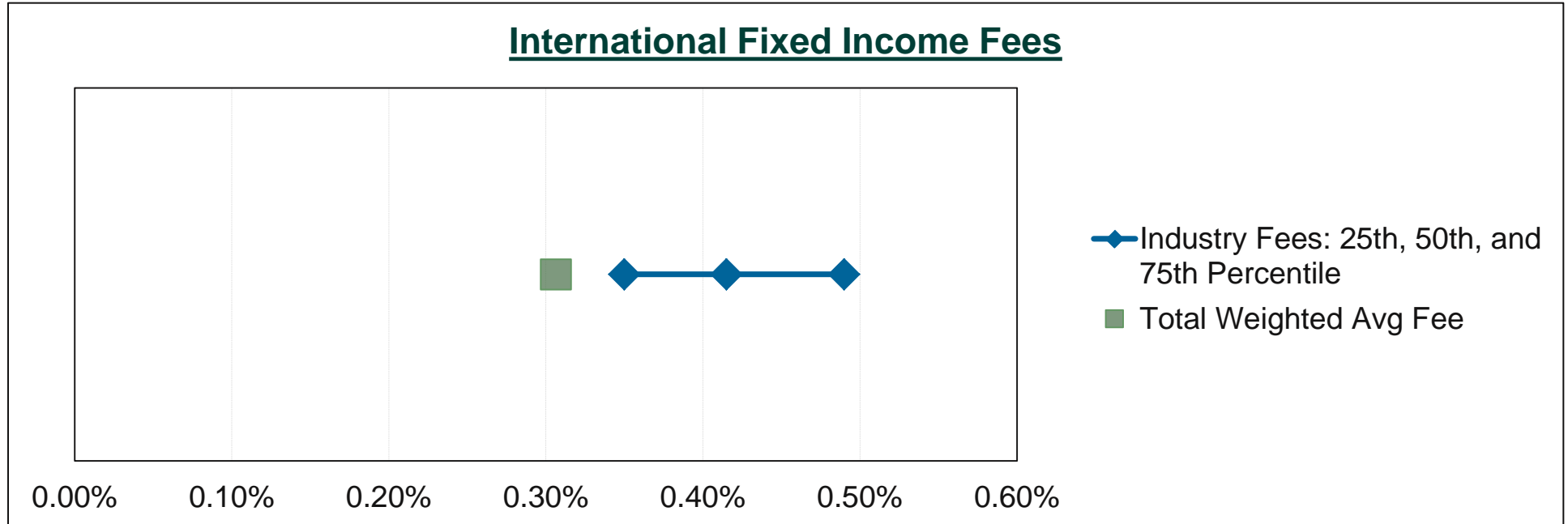
Below Investment Grade Fixed Income	
Asset-Based Fee Strategies	Fee %
Loomis Sayles	0.50%
Weighted Average Asset-Based Fee	0.50%
Industry Fee - 25th Percentile	0.42%
Industry Fee - Median	0.50%
Industry Fee - 75th Percentile	0.52%
<i>N=240, Average of Actual Fee Universe (N=23) and Published Fee Universe (N=217)</i>	

Below Investment Grade Fixed Income	
Performance & Hybrid Fee Strategies	Fee %
Ares Credit Strategies	3.10%
Cerberus Private Credit	1.08%
Goldman Sachs 2006 Offshore	6.62%
Goldman Sachs V Offshore	1.27%
PIMCO Bravo II	2.84%
Weighted Average Performance & Hybrid Fee	2.31%
Total Weighted Average Below-IG FI Fee	1.32%

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
 - Both Goldman Sachs investment products charge a management fee of 1.5% based on the original commitment plus a performance-based fee.
 - PIMCO Bravo Fund II charges a fee of 1.45% based on assets under management plus a performance fee. The performance fee is 20% of excess returns over a “preferred” return of 8%.
 - Cerberus Private Credit charges a fee of 0.90% based on assets under management plus a performance fee.
 - Ares Credit Strategies charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 10% of the net appreciation of the fund.

International Fixed Income

Pension Trust



N=195, Average of Actual Fee Universe (N=22) and Published Fee Universe (N=173)

- International Fixed Income managers invest in bonds and other debt instruments that gain exposure to foreign entities and currencies that typically trade outside the U.S.
- North Dakota's average International Fixed Income account size for FY 2018 was \$95mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.31%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes below \$100mm

International Fixed Income

Pension Trust

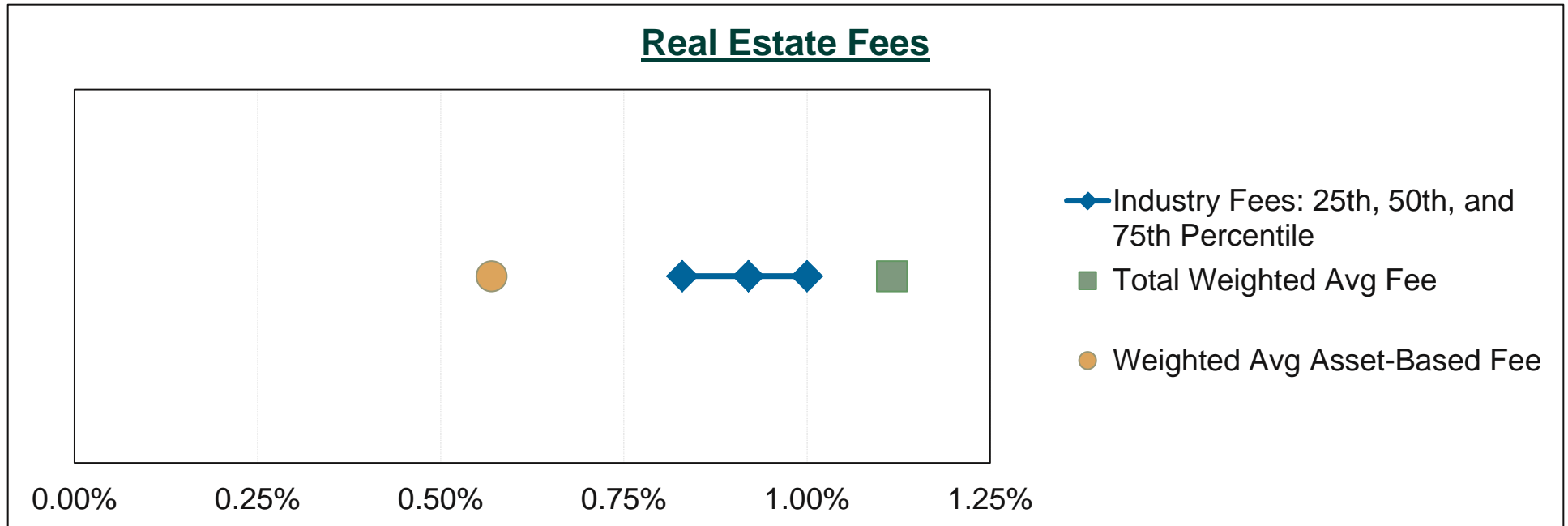
International Fixed Income	
Asset-Based Fee Strategies	Fee %
Brandywine	0.31%
UBS Global Asset Management	0.29%
Total Weighted Intl Fixed Income Fee	0.31%
<hr/>	
Industry Fee - 25th Percentile	0.35%
Industry Fee - Median	0.42%
Industry Fee - 75th Percentile	0.49%

N=195, Average of Actual Fee Universe (N=22) and Published Fee Universe (N=173)

- All managers for this asset class fall into the asset-based fee category.
- Both managers were redeemed during the fiscal year, as the plan entirely eliminated its allocation to the asset class.
- Brandywine charged an annual asset-based fee of 0.45% on the first \$50mm invested with the fund, 0.40% on the next \$50mm, and 0.35% on the next \$50mm. During the first two quarters, the Pension Trust had \$158mm invested with the fund on average and therefore would have paid an annualized fee rate of roughly 0.40% during those quarters.
- UBS had a similar asset-based fee structure that was tiered. The Pension Trust's average balance with the manager during the first two quarters was roughly \$94mm. The Trust's effective annual fee rate during those quarters would have been roughly 0.33%.

Real Estate

Pension Trust



N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)

- Real Estate managers invest directly in real properties (e.g. offices, multi-family, retail, and other physical properties) and securities that gain access to such economic interests.
- North Dakota's average Real Estate account size for FY 2018 was \$57mm
- The orange circle represents North Dakota's Real Estate weighted average asset-based management fee of 0.57%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 1.12%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm

Real Estate

Pension Trust

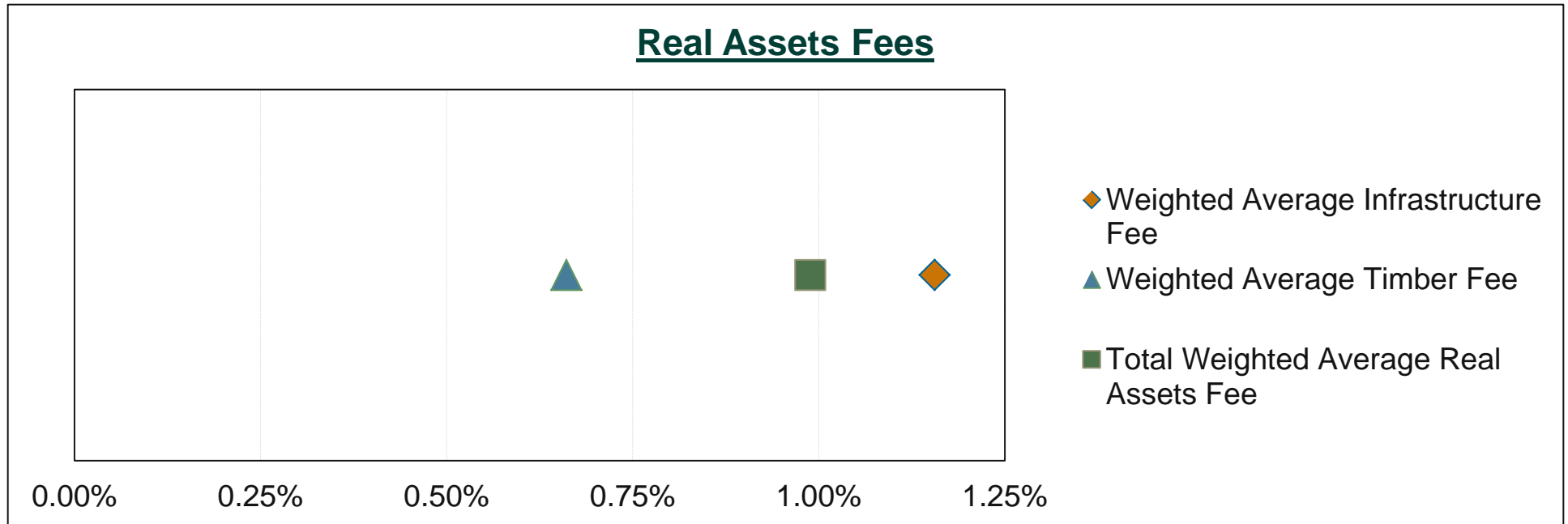
Real Estate	
Asset-Based Fee Strategies	Fee %
INVESCO Core Real Estate	0.34%
JP Morgan Special and Strategic	0.89%
Weighted Average Asset-Based Fee	0.57%
Industry Fee - 25th Percentile	0.83%
Industry Fee - Median	0.92%
Industry Fee - 75th Percentile	1.00%
<i>N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)</i>	
Total Weighted Average Real Estate Fee	1.12%

Real Estate	
Performance and Hybrid Fee Strategies	Fee %
INVESCO Real Estate Fund II	0.00%
INVESCO Real Estate Fund III	1.39%
INVESCO Asia RE Feeder	0.00%
INVESCO Asia RE Fund III	9.04%
INVESCO Value Added Fund IV	3.82%
JP Morgan Alternative Property Fd.	0.00%
JP Morgan Greater China Fund	0.03%
JP Morgan Greater European Opp	2.92%
Weighted Average Performance and Hybrid Fee	4.08%

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
 - Invesco Real Estate Fund II, Invesco Real Estate Fund III, Invesco Asia RE Feeder Fund, Invesco Asia RE Fund III, and Invesco Valued Added Fund IV each charge a base management fee on assets and charge a performance fee of 20% for performance exceeding a “preferred” return set by each fund.
 - The JP Morgan Greater European Opportunity Fund charges a base management fee on assets and a sliding scale performance fee for performance exceeding a “preferred” return.
 - The JP Morgan Alternative Fund, JP Morgan Greater China Fund, Invesco Real Estate Fund II, and Invesco Asia RE Feeder are currently being liquidated. The managers are not presently charging a fee to manage these funds during liquidation.

Real Assets

Pension Trust



- Real Assets encompass asset classes that typically provide inflation protection, often times including investments in tangible goods or resources.
- North Dakota's average Real Assets account size for FY 2018 was \$56mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.99%
- The blue triangle represents the weighted average fee for all Timber assets: 0.66%
- The orange diamond represents the weighted average fee for all Infrastructure assets: 1.16%

Real Assets

Pension Trust

Real Assets	
Timber	Fee %
TIR - Teredo	0.57%
TIR - Springbank	0.69%
Weighted Average Timber Fee	0.66%
Infrastructure	Fee %
JP Morgan Asian Infrastructure	1.64%
JP Morgan Infrastructure Inv. Fund	0.67%
Grosvenor Infrastructure Fund I	0.82%
Grosvenor Infrastructure Fund II	1.16%
ISQ Global Infrastructure II	*
Weighted Average Infrastructure Fee	1.16%
Total Weighted Average Real Assets Fee	0.99%

- All managers in the Real Assets asset class charge a base management fee on assets and charge a performance fee for performance exceeding a “preferred” return set by each fund.
- *ISQ was added in the fourth quarter of fiscal year 2018. The management fee is charged on committed capital (the total amount that SIB is contractually obligated to invest), not invested capital (the amount actually invested). NDSIB’s committed amount is \$65 million; ISQ’s fee rate equates to a dollar payment during fiscal 2018 of \$925,951. SIB’s invested total with ISQ as of June 30, 2018 was \$3.5 million.

Private Equity

Pension Trust

Private Equity	
Total Weighted Average Private Equity Fee	1.84%

- Due to a number of factors, such as maturity of the portfolio, point in the business cycle, and the highly varied and customized approach of Private Equity strategies, Callan cannot produce an informationally viable industry fee universe for comparison.
- At the end of fiscal year 2018 private equity accounted for 3.3% of Total Fund assets.
- The average Private Equity fund in the North Dakota Pension Trust had a net asset value of \$8.2mm during FY 2018, with total assets allocated to private equity of \$191.4mm as of June 30, 2018.
- Total asset class weighted average fee for FY 2018: 1.83%
- Similar to the fiscal 2016 fee study, the management fees for NDSIB's private equity portfolio are at levels for similar strategies and are in line with industry norms.
- Note that the Adam's Street Direct Co-Investment only charged fees for the first quarter of the 2018 Fiscal Year. The fees amounted to nearly \$14,000. During the subsequent quarters the Trust accrued a performance fee credit of \$28,000 against future fees due to poor performance of the fund. For the purposes of this calculation, the fee charged by Adam's Street Direct Co-Investment was valued at zero.

Cash

Pension Trust

Cash and Equivalents	
Asset-Based Fee Strategies	Fee %
Bank of North Dakota Cash Account	0.00%
Northern Trust Cash Account	0.13%
Total Weighted Average Cash Equivalents Fee	0.11%

- The managers for this asset class fall into the asset-based fee category.
- Fees for cash management are typically below 20 basis points (0.20%) per annum. Fees paid by the North Dakota State Investment Board's Pension Trust cash management are well within industry norms.
- North Dakota's average Cash account size for FY 2018 was \$28.2mm

Callan

Insurance Trust

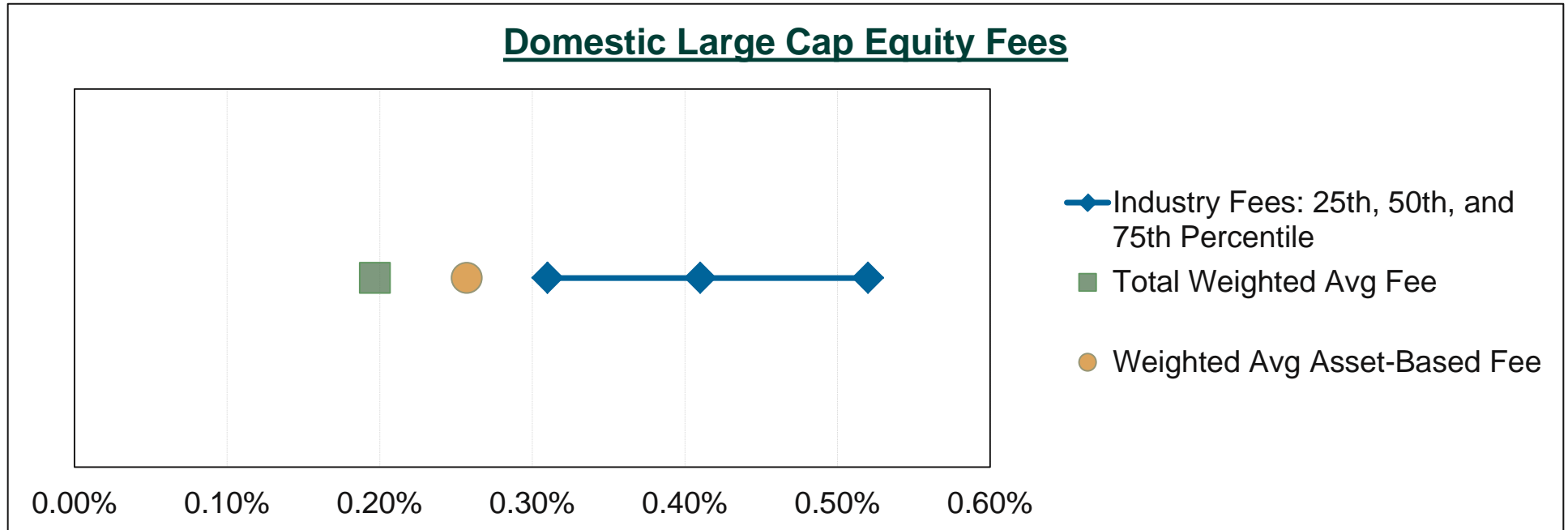
Insurance Trust

NDSIB Fee Study Fiscal Year 2018 Executive Summary

- Total Equity Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies. In aggregate all equity strategy composites had fees below their respective 25th percentiles.
 - Total Domestic Large Cap Equity fees were well below the 25th percentile of the industry fee universe
 - Total Small Cap Equity fees were well below the 25th percentile, with the Trust having paid no performance based fees during the fiscal year
 - Total Developed International Equity fees were below the 25th percentile and represented only asset-based fee strategies
- Total Domestic Fixed Income Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
 - Total Domestic Fixed Income fees paid were above the 75th percentile, driven largely by performance/hybrid fee based strategies, while total asset-based fee strategies were below the median
- Diversified Real Assets Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies spanning public and private markets. asset-based fee strategies fell below the 25th percentile with performance/hybrid fee strategies pushing the total fees rate paid higher, but still below the 25th percentile.
 - Due to the custom nature of non-core public strategies and their closed-end fund structures, there is no applicable manager fee distribution and so it presents a skew to the asset-based fee universe for the comparison
- Total Real Estate manager fees paid represented asset-based fee strategies only.
 - Total Real Estate manager fees paid were well below the 25th percentile
- Short-term Fixed Income manager fees paid represented asset-based fee strategies only.
 - Fees paid fell below the 25th percentile of the strategy universe

Domestic Large Cap Equity

Insurance Trust



N=69, Actual Fee Universe

- Domestic Large Cap Equity managers invest in large company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Large Cap Equity account size for FY 2018 was \$62mm
- The orange circle represents North Dakota's Domestic Large Cap Equity weighted average asset-based management fee of 0.26%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.2%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm

Domestic Large Cap Equity

Insurance Trust

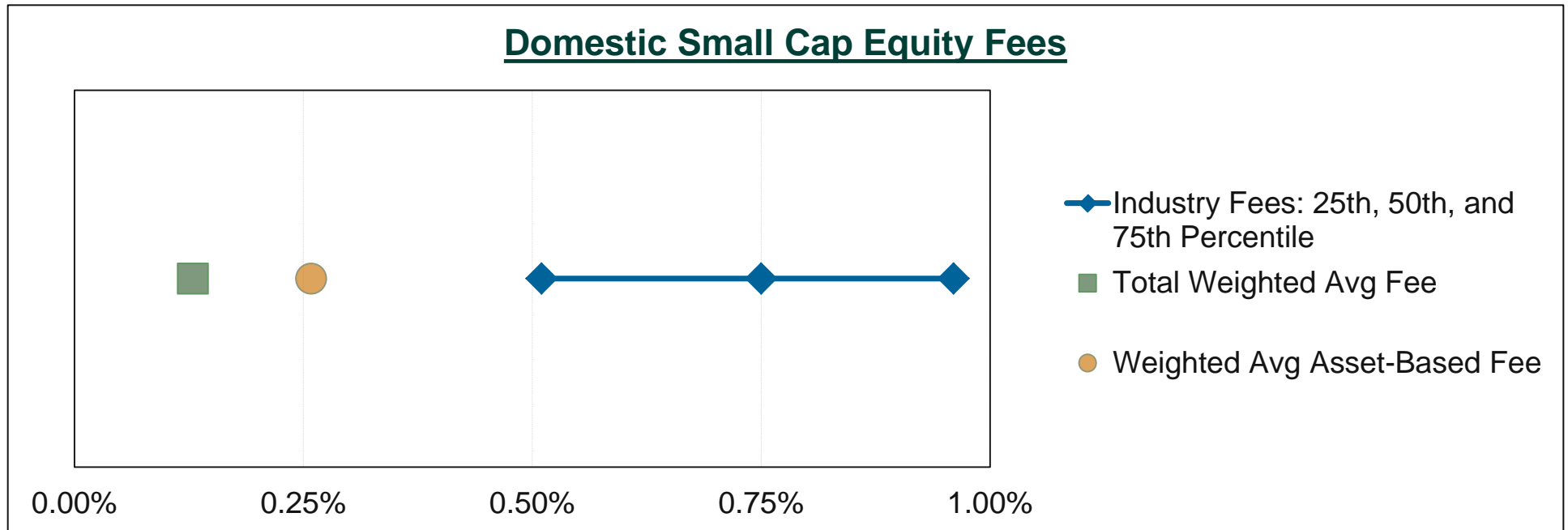
Domestic Large Cap Equity	
Asset-Based Fee Strategies	Fee %
L.A. Capital Growth	0.21%
LSV Large Cap Value	0.30%
Weighted Average Asset-Based Fee	0.26%
Performance and Hybrid Fee Strategies	Fee %
L.A. Capital Enhanced Index	0.21%
Clifton Enhanced S&P 500*	0.00%
Weighted Average Performance and Hybrid Fee	0.11%
Total Weighted Average U.S. Lg Cap Fee	0.20%
Industry Fee - 25th Percentile	0.31%
Industry Fee - Median	0.41%
Industry Fee - 75th Percentile	0.52%

N=69, Actual Fee Universe

- The Domestic Large Cap Equity Portfolio employs several managers with performance and hybrid fee structures and is therefore difficult to compare directly to industry averages.
 - L.A. Capital Enhanced Index charges a base management fee on all assets under management. A performance based fee of 20% of returns in excess of the benchmark is charged on approximately 40% of the assets.
 - Parametric Clifton Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated. Fees are paid once a year for performance through June 30.
 - **Note that Clifton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$280,000 in performance fee credit.*

Domestic Small Cap Equity

Insurance Trust



N=121, Actual Fee Universe

- Domestic Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Small Cap Equity account size for FY 2018 was \$41mm
- The orange circle represents North Dakota's Domestic Small Cap Equity weighted average asset-based management fee of 0.26%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.13%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes below \$50mm

Domestic Small Cap Equity

Insurance Trust

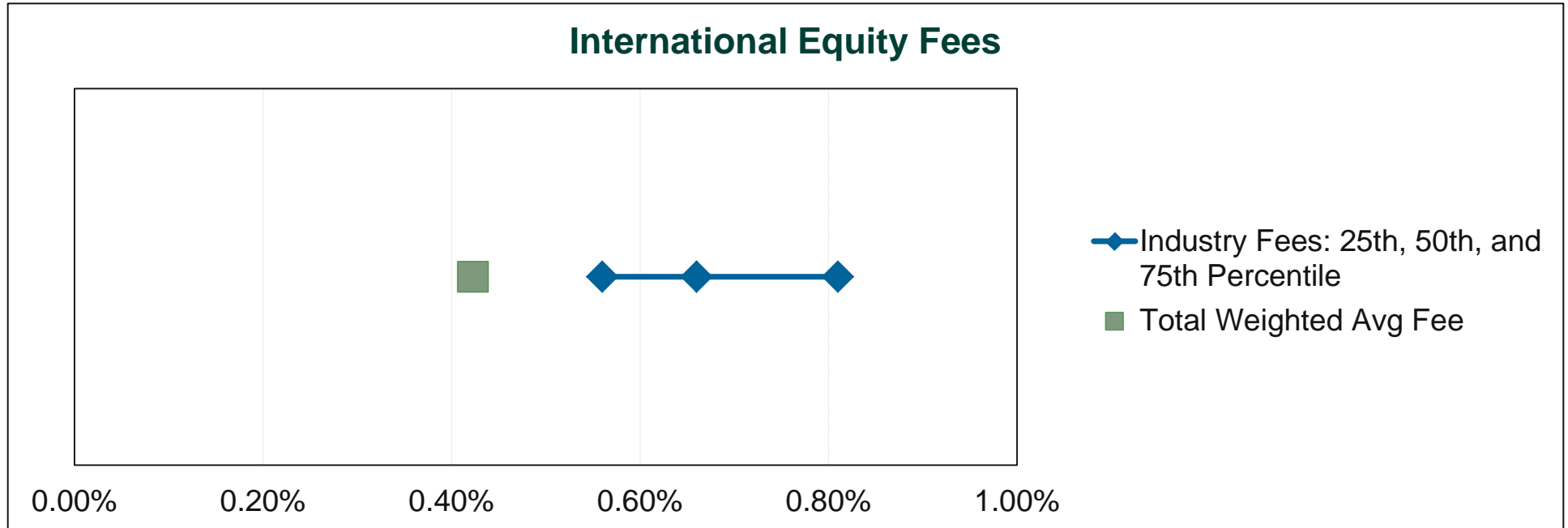
Domestic Small Cap Equity	
Asset-Based Fee Strategies	Fee %
PIMCO (Research Affiliates)	0.26%
Weighted Average Asset-Based Fee	0.26%
Performance and Hybrid Fee Strategies	Fee %
Clifton Enhanced Small Cap*	0.00%
Weighted Average Performance and Hybrid Fee	0.00%
Total Weighted Average U.S. Sm Cap Fee	0.13%
Industry Fee - 25th Percentile	0.51%
Industry Fee - Median	0.75%
Industry Fee - 75th Percentile	0.96%

N=121, Actual Fee Universe

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
 - Parametric Clifton Small Cap Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated over the benchmark. Fees are paid once a year for performance through June 30.
 - **Note that Clinton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$60,000 in performance fee credit.*

International Equity

Insurance Trust



N=112, Actual Fee Universe

- Developed International Equity managers invest in stocks that trade and gain exposure to developed markets and economies outside of the U.S.
- North Dakota's average International Equity account size for FY 2018 was \$45mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.42%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes below \$50mm

International Equity

Insurance Trust

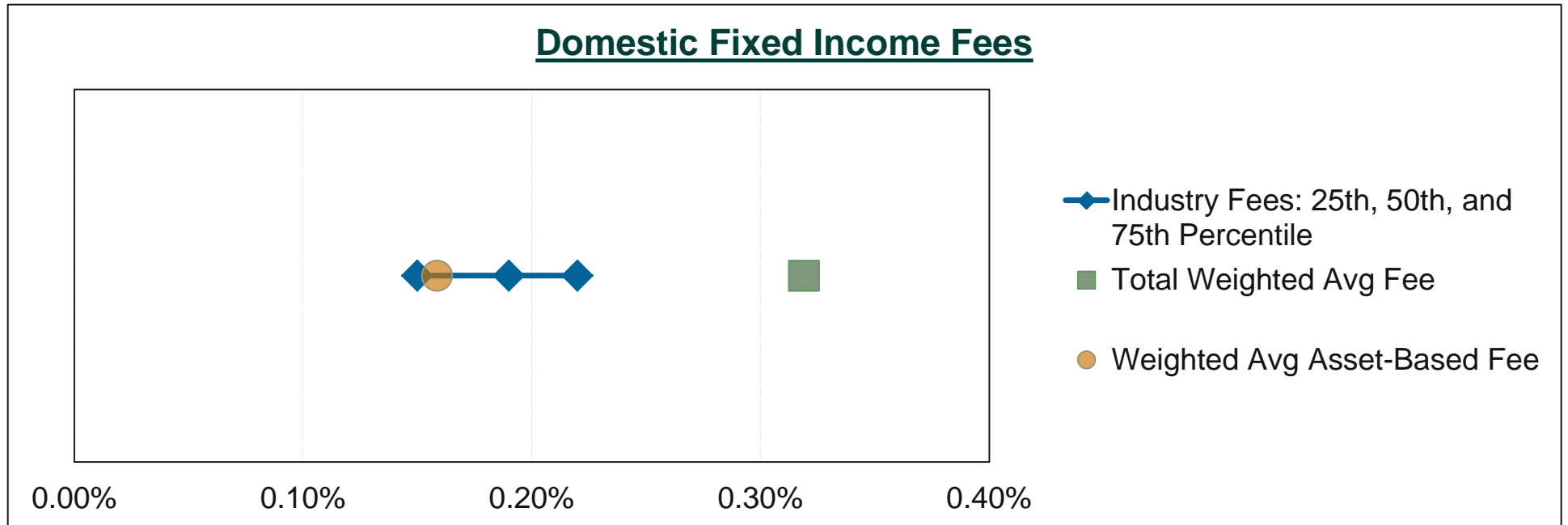
International Equity	
Asset-Based Fee Strategies	Fee %
LSV International Value	0.40%
DFA Int'l Small Cap	0.69%
William Blair	0.39%
Vanguard Int'l Explorer Fund	0.38%
Total Weighted Average Intl Equity Fee	0.42%
<hr/>	
Industry Fee - 25th Percentile	0.56%
Industry Fee - Median	0.66%
Industry Fee - 75th Percentile	0.81%

N=112, Actual Fee Universe

- All managers for this asset class fall into the asset-based fee category.

Domestic Fixed Income

Insurance Trust



N=39, Actual Fee Universe

- Domestic Fixed Income managers invest in bonds and other debt instruments.
- North Dakota's average Domestic Fixed Income account size for FY 2018 was \$153mm
- The orange circle represents North Dakota's Domestic Fixed Income weighted average asset-based management fee of 0.16%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.32%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm

Domestic Fixed Income

Insurance Trust

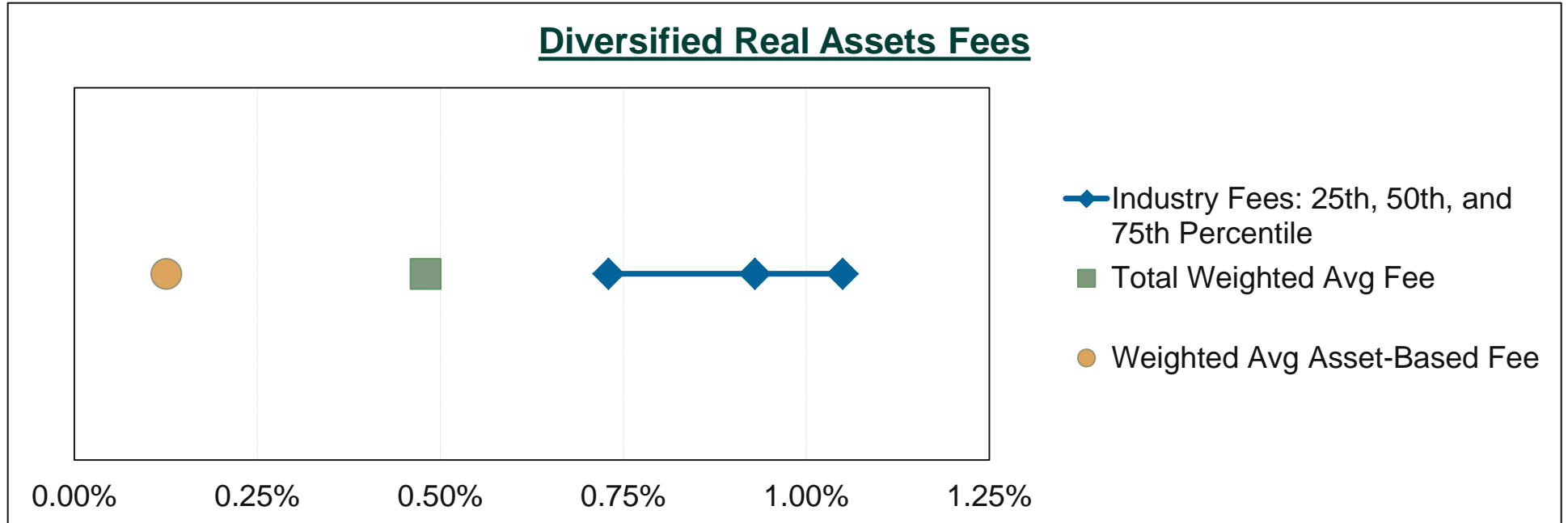
Domestic Fixed Income	
Asset-Based Fee Strategies	Fee %
Declaration Total Return	0.39%
Prudential	0.25%
SSgA U.S. Govt Credit Bond Index	0.02%
Wells Capital	0.15%
Western Asset Management	0.12%
Weighted Average Asset-Based Fee	0.16%
Performance and Hybrid Fee Strategies	
	Fee %
PIMCO DiSCO II	2.16%
PIMCO Bravo II	2.84%
Weighted Average Performance and Hybrid Fee	2.38%
Total Weighted Average U.S. Fixed Income Fee	0.32%
Industry Fee - 25th Percentile	0.15%
Industry Fee - Median	0.19%
Industry Fee - 75th Percentile	0.22%

N=39, Actual Fee Universe

- PIMCO DiSCO II charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 15% of the excess return above a variable hurdle rate.
- PIMCO Bravo Fund II charges a fee of 1.45% based on assets under management plus a performance fee. The performance fee is 20% of excess returns over a “preferred” return of 8%.

Diversified Real Assets

Insurance Trust



N=23, Callan's Diversified Real Assets Peer Group

- Diversified Real Assets managers invest in assets that are expected to perform well during periods of inflation.
- North Dakota's average Diversified Real Assets account size for FY 2018 was \$69mm
- The orange circle represents North Dakota's Diversified Real Assets weighted average asset-based management fee of 0.13%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.48%
- Fee universe was constructed using Callan's Diversified Real Assets Peer Group of 23 investment manager constituents.

Diversified Real Assets

Insurance Trust

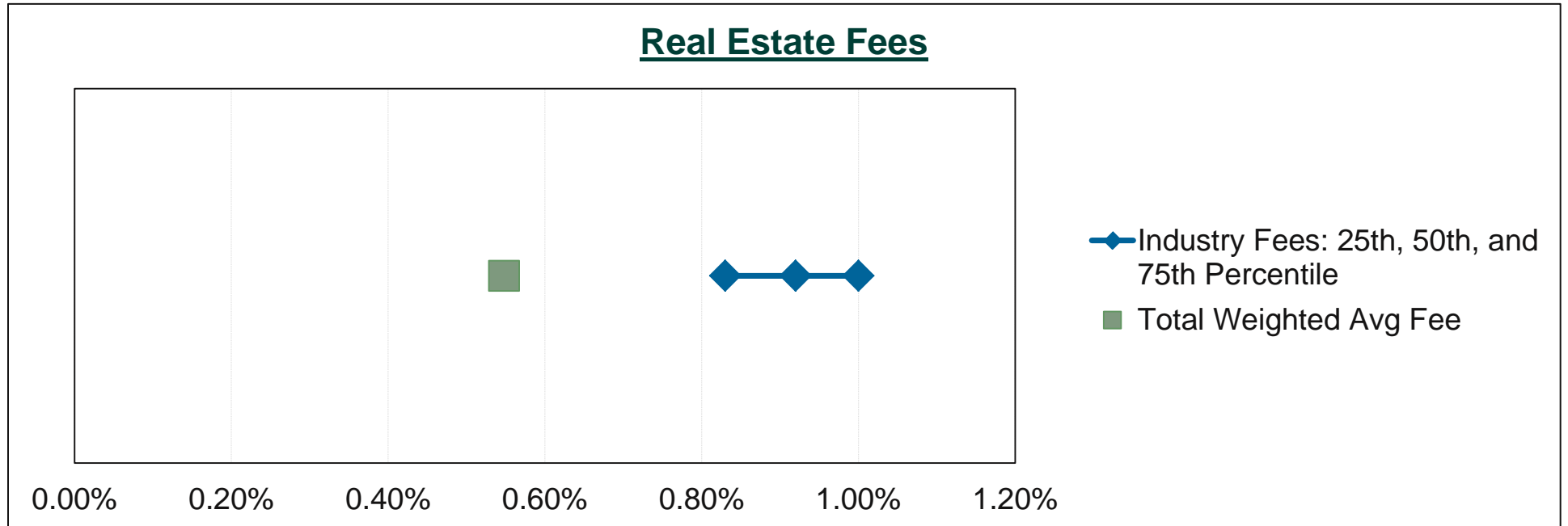
Diversified Real Assets	
Asset-Based Fee Strategies	Fee %
Western Asset Management TIPS	0.13%
Weighted Average Asset-Based Fee	0.13%
Performance and Hybrid Fee Strategies	Fee %
JP Morgan Infrastructure	0.67%
Grosvenor Infrastructure Fund I	0.82%
TIR - Eastern Timber Opportunities	0.85%
Weighted Average Performance and Hybrid Fee	0.75%
Total Weighted Average Real Assets Fee	0.48%
Industry Fee - 25th Percentile	0.73%
Industry Fee - Median	0.93%
Industry Fee - 75th Percentile	1.05%

N=23, Callan's Diversified Real Assets Peer Group

- JP Morgan Infrastructure Fund charges a base management fee on assets and charges a performance fee for performance exceeding a “preferred” return set by the fund.
- Grosvenor Infrastructure Fund I charges a base management fee on assets and charges a performance fee for performance exceeding a “preferred” return set by the fund.
- TIR Easter Timber Opportunities Fund charges a base management fee on assets and charges a performance fee for performance exceeding a “preferred” return set by the fund.

Real Estate

Insurance Trust



N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)

- Real Estate managers invest directly in real properties (e.g. offices, multi-family, retail, and other physical properties) and securities that gain access to such economic interests.
- North Dakota's average Real Estate account size for FY 2018 was \$70mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.55%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm

Real Estate

Insurance Trust

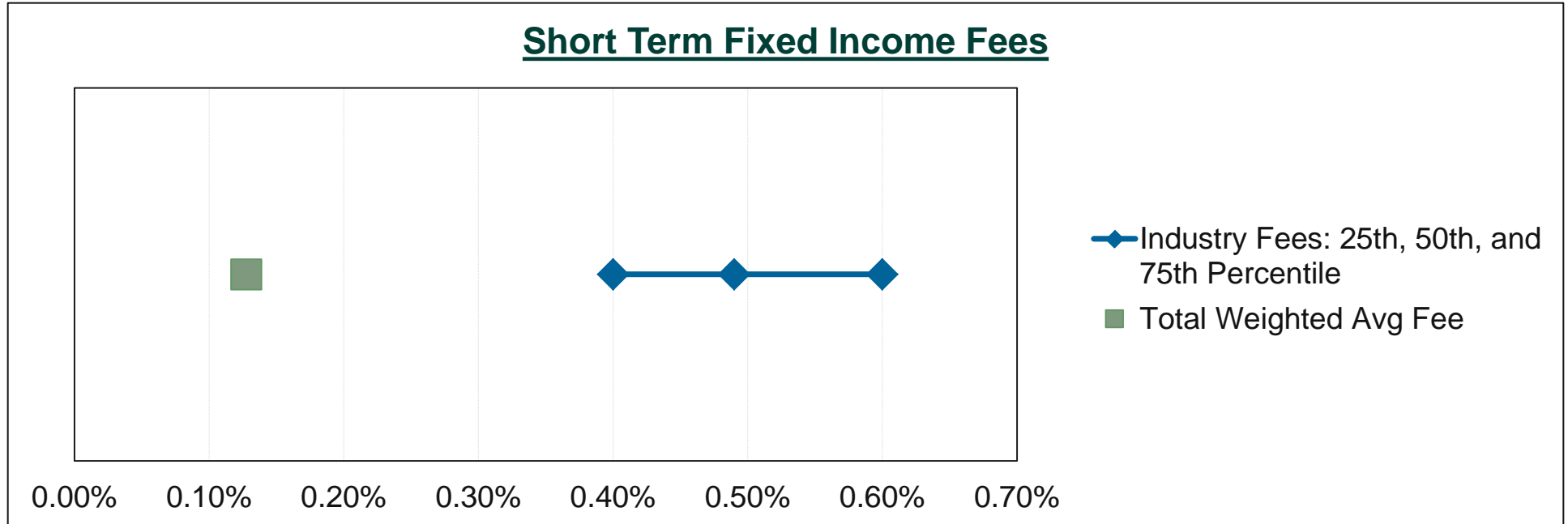
Real Estate	
Asset-Based Fee Strategies	Fee %
Invesco Core Real Estate	0.34%
JP Morgan Real Estate	0.74%
Total Weighted Average Real Estate Fee	0.55%
Industry Fee - 25th Percentile	0.83%
Industry Fee - Median	0.92%
Industry Fee - 75th Percentile	1.00%

N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)

- All managers for this asset class fall into the asset-based fee category.

Short Term Fixed Income

Insurance Trust



N=136, Callan Short Investment Grade Bond Mutual Funds

- Short Term Fixed Income managers invest in bonds that have short maturity dates.
- North Dakota's average Short Term Fixed Income account size for FY 2018 was \$88mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.13%
- The fee universe was constructed using Callan's Short Investment Grade Bond Mutual Funds Peer Group

Short Term Fixed Income and Cash

Insurance Trust

Short Term Fixed Income	
Asset-Based Fee Strategies	Fee %
JPM Short Term	0.13%
Total Weighted Average ST Fixed Income Fee	0.13%
Industry Fee - 25th Percentile	0.40%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.60%

N=136, Callan Short Investment Grade Bond Mutual Funds

Cash and Equivalents	
Asset-Based Fee Strategies	Fee %
Bank of North Dakota Cash Account	0.00%
Northern Trust Cash Account	0.24%
Total Weighted Average Cash Equivalents Fee	0.17%

- All managers for these asset classes fall into the asset-based fee category.
- North Dakota's average Cash account size for FY 2018 was \$30mm
- Fees for cash management are typically below 20 basis points (0.20%). Fees paid by the North Dakota State Investment Board's Insurance Trust cash and short-term fixed income management are well within industry norms.

Callan

Legacy Trust

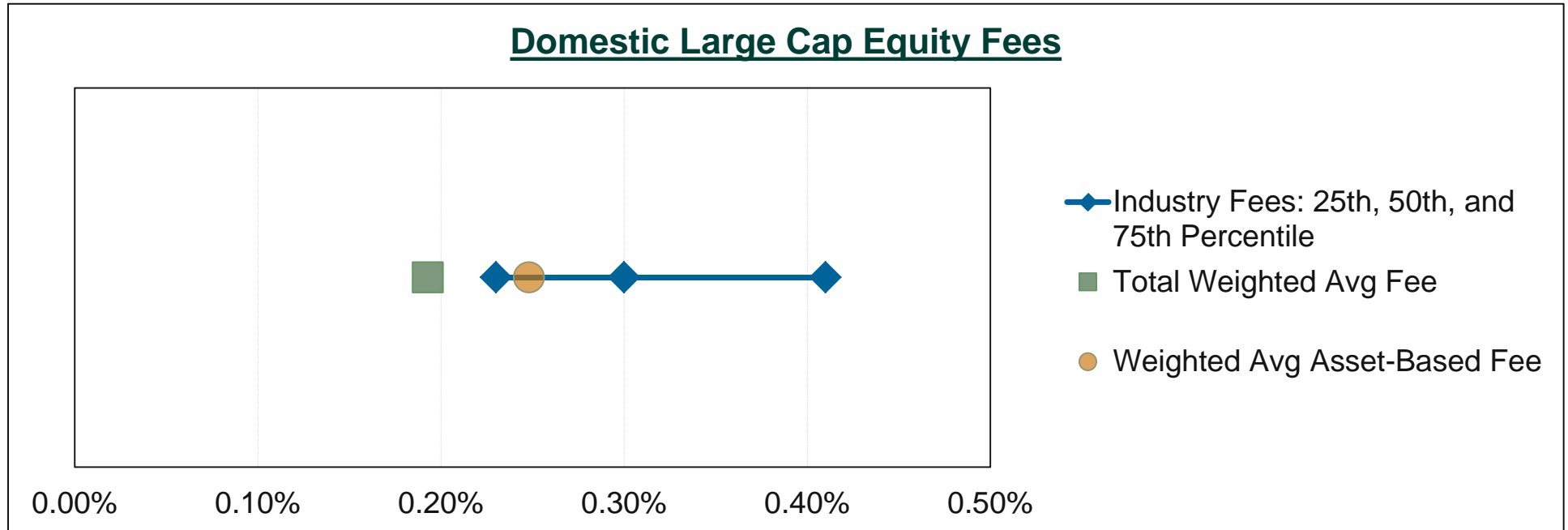
Legacy Trust

NDSIB Fee Study Fiscal Year 2018 Executive Summary

- Total Equity Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
 - Total Domestic Large Cap Equity fees were below the 25th percentile of industry fees. The average fees paid by the Trust were pressed lower by performance based fee structures.
 - Total Small Cap Equity fees were well below the 25th percentile with performance based fee strategies lower than asset-based fee strategies.
 - Developed International Equity fees were slightly below the 25th percentile and represented only asset-based fee strategies.
- Total Domestic Fixed Income Manager fees paid represented both asset-based and performance/hybrid fee strategies.
 - Total Domestic Fixed Income fees paid were above the 75th percentile of industry fees. This was largely due to the impact of performance-based fee schedules. Asset based fees paid by the trust were on par with the 25th percentile of industry fees.
- Diversified Real Assets Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies spanning public and private markets. Asset based fee strategies fell well below the 25th percentile, with performance/hybrid fee strategies pushing the total fees paid higher, but still below the 25th percentile.
 - Due to the custom nature of the private strategies and their closed-end fund structures, there is no applicable manager fee distribution and so it presents a skew to the asset-based fee universe for the comparison
- Total Real Estate manager fees paid represented asset-based fee strategies only.
 - Total Real Estate manager fees paid were well below the 25th percentile

Domestic Large Cap Equity

Legacy Trust



N=61, Actual Fee Universe

- Domestic Large Cap Equity managers invest in large company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Large Cap Equity account size for FY 2018 was \$289mm
- The orange circle represents North Dakota's Domestic Large Cap Equity weighted average asset-based management fee of 0.25%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.19%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

Domestic Large Cap Equity

Legacy Trust

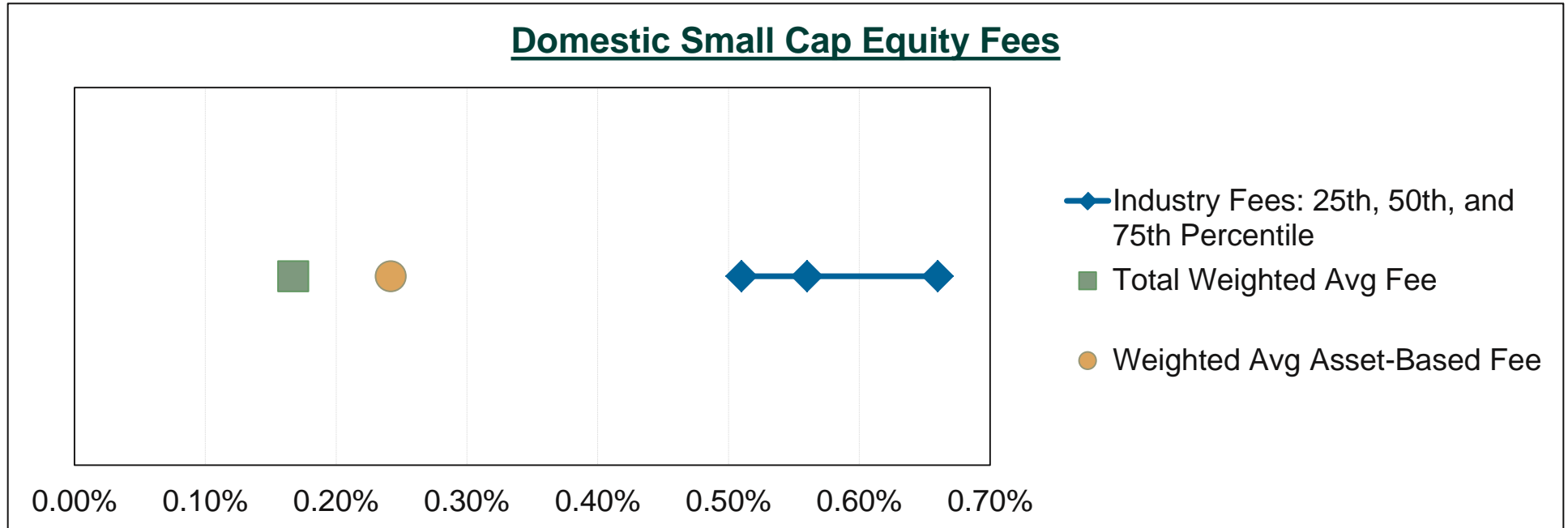
Domestic Large Cap Equity	
Asset-Based Fee Strategies	Fee %
L.A. Capital Growth	0.21%
LSV Large Cap Value	0.29%
Weighted Average Asset-Based Fee	0.25%
Performance and Hybrid Fee Strategies	Fee %
L.A. Capital Enhanced Index	0.22%
Clifton Enhanced S&P 500*	0.00%
Weighted Average Performance and Hybrid Fee	0.11%
Total Weighted Average U.S. Lg Cap Fee	0.19%
Industry Fee - 25th Percentile	0.23%
Industry Fee - Median	0.30%
Industry Fee - 75th Percentile	0.41%

N=61, Actual Fee Universe

- The Domestic Large Cap Equity Portfolio employs several managers with performance and hybrid fee structures and is therefore difficult to compare directly to industry averages.
 - L.A. Capital Enhanced Index charges a base management fee on all assets under management. A performance based fee of 20% of returns in excess of the benchmark is charged on approximately 40% of the assets.
 - Parametric Clifton Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated. Fees are paid once a year for performance through June 30.
 - **Note that Clifton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$1.3mm in performance fee credit.*

Domestic Small Cap Equity

Legacy Trust



N=38, Actual Fee Universe

- Domestic Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Small Cap Equity account size for FY 2018 was \$212mm
- The orange circle represents North Dakota's Domestic Small Cap Equity weighted average asset-based management fee of 0.24%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.17%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

Domestic Small Cap Equity

Legacy Trust

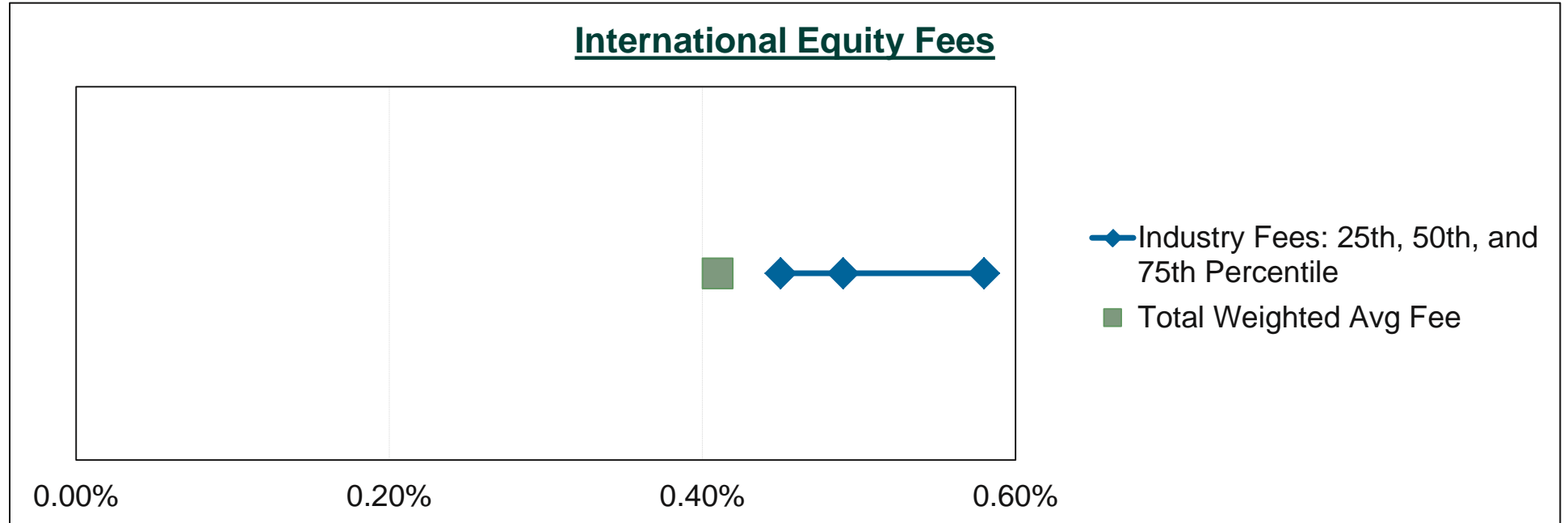
Domestic Small Cap Equity	
Asset-Based Fee Strategies	Fee %
PIMCO (Research Affiliates)	0.24%
Weighted Average Asset-Based Fee	0.24%
Performance and Hybrid Fee Strategies	Fee %
Clifton Enhanced Small Cap	0.10%
Weighted Average Performance and Hybrid Fee	0.10%
Total Weighted Average U.S. Sm Cap Fee	0.17%
Industry Fee - 25th Percentile	0.51%
Industry Fee - Median	0.56%
Industry Fee - 75th Percentile	0.66%

N=38, Actual Fee Universe

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
 - Parametric Clifton Small Cap Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated over the benchmark. Fees are paid once a year for performance through June 30.

International Equity

Legacy Trust



N=53, Actual Fee Universe

- Developed International Equity managers invest in stocks that trade and gain exposure to developed markets and economies outside of the U.S.
- North Dakota's average International Equity account size for FY 2018 was \$263mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.41%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

International Equity

Legacy Trust

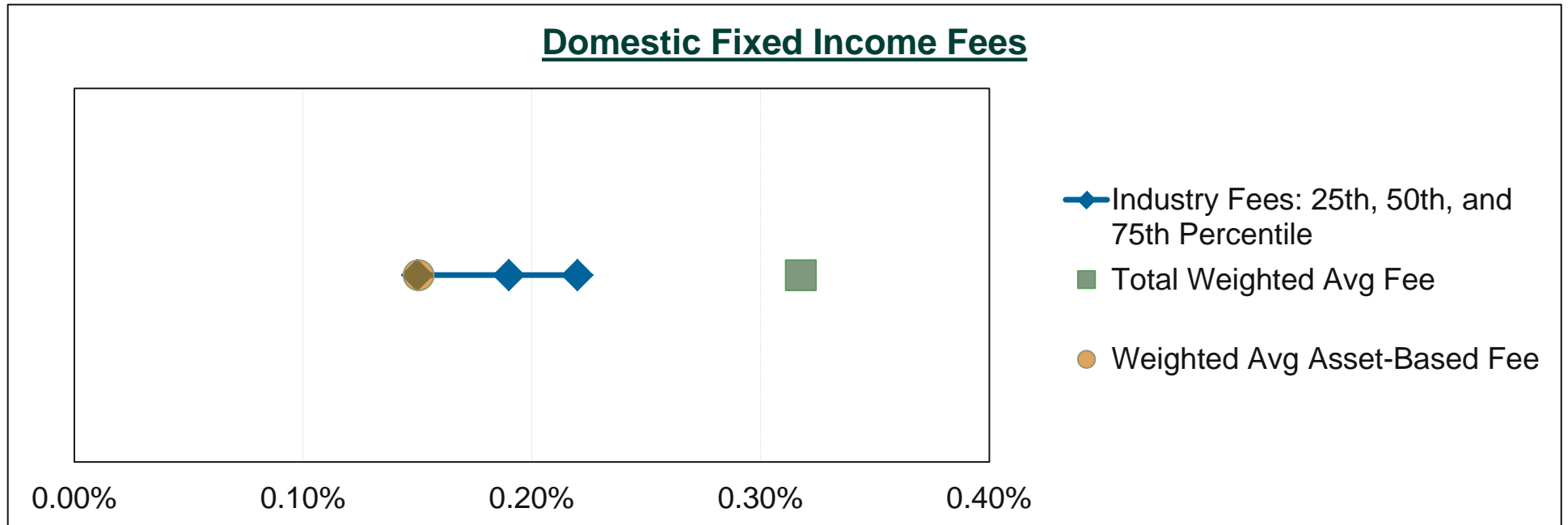
International Equity	
Asset-Based Fee Strategies	Fee %
LSV International Value	0.39%
DFA Int'l Small Cap	0.66%
William Blair	0.38%
Vanguard Int'l Explorer Fund	0.38%
Total Weighted Average Intl Equity Fee	0.41%
<hr/>	
Industry Fee - 25th Percentile	0.45%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.58%

N=53, Actual Fee Universe

- All managers for this asset class fall into the asset-based fee category.

Domestic Fixed Income

Legacy Trust



N=39, Actual Fee Universe

- Domestic Fixed Income managers invest in bonds and other debt instruments.
- North Dakota's average Domestic Fixed Income account size for FY 2018 was \$183mm
- The orange circle represents North Dakota's Domestic Fixed Income weighted average asset-based management fee of 0.15%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.32%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm

Domestic Fixed Income

Legacy Trust

Domestic Fixed Income	
Asset-Based Fee Strategies	Fee %
Declaration Total Return	0.39%
Prudential	0.25%
SSgA U.S. Govt Credit Bond Index	0.03%
Wells Capital	0.15%
Western Asset Management	0.12%
Bank of North Dakota CDs	0.00%
Weighted Average Asset-Based Fee	0.15%

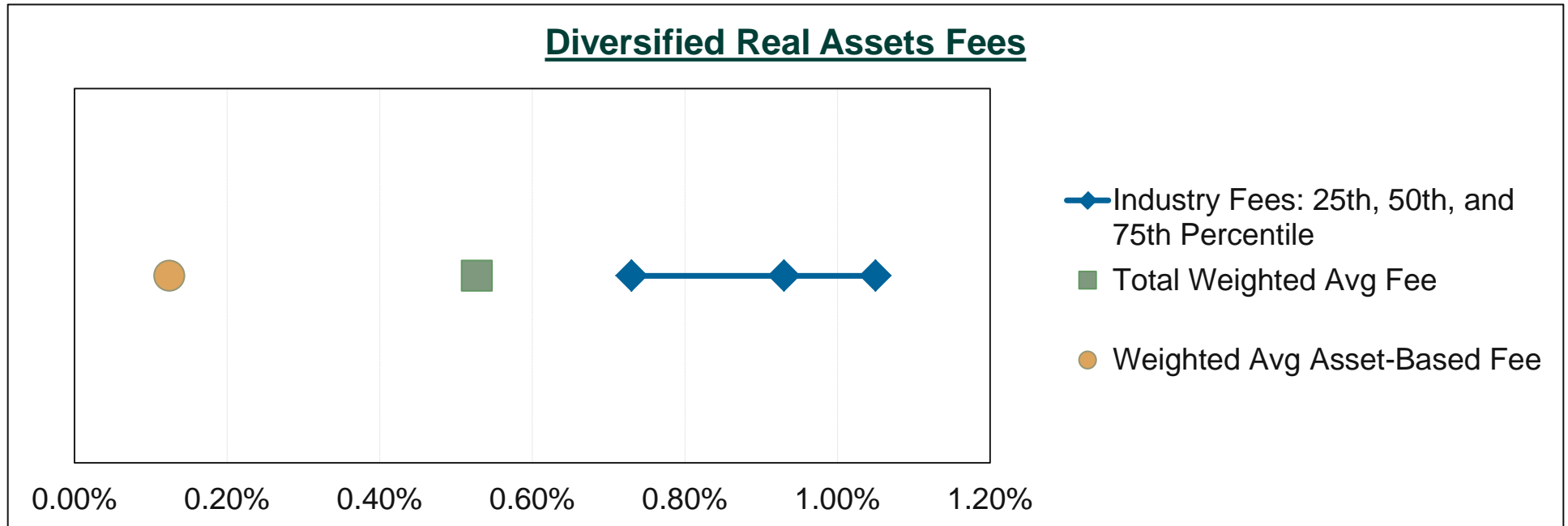
Domestic Fixed Income	
Performance and Hybrid Fee Strategies	Fee %
Cerberus Private Credit	2.96%
PIMCO DiSCO II	2.16%
PIMCO Bravo II	2.84%
Ares Credit Strategies	1.13%
Weighted Average Performance and Hybrid Fee	2.22%
<hr/>	
Total Weighted Average U.S. Fixed Income Fee	0.32%
<hr/>	
Industry Fee - 25th Percentile	0.15%
Industry Fee - Median	0.19%
Industry Fee - 75th Percentile	0.22%

N=39, Actual Fee Universe

- PIMCO DiSCO II charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 15% of the excess return above a variable hurdle rate.
- PIMCO Bravo Fund II charges a fee of 1.45% based on assets under management plus a performance fee. The performance fee is 20% of excess returns over a “preferred” return of 8%
- Cerberus Private Credit charges a fee of 0.90% based on assets under management plus a performance fee.
- Ares Credit Strategies charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 10% of the net appreciation of the fund.

Diversified Real Assets

Legacy Trust



N=23, Callan's Diversified Real Assets Peer Group

- Diversified Real Assets managers invest in assets that are expected to perform well during periods of inflation.
- North Dakota's average Diversified Real Assets account size for FY 2018 was \$128mm
- The orange circle represents North Dakota's Diversified Real Assets weighted average asset-based management fee of 0.12%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.53%
- Fee universe was constructed using Callan's Diversified Real Assets Peer Group of 23 investment manager constituents.

Diversified Real Assets

Legacy Trust

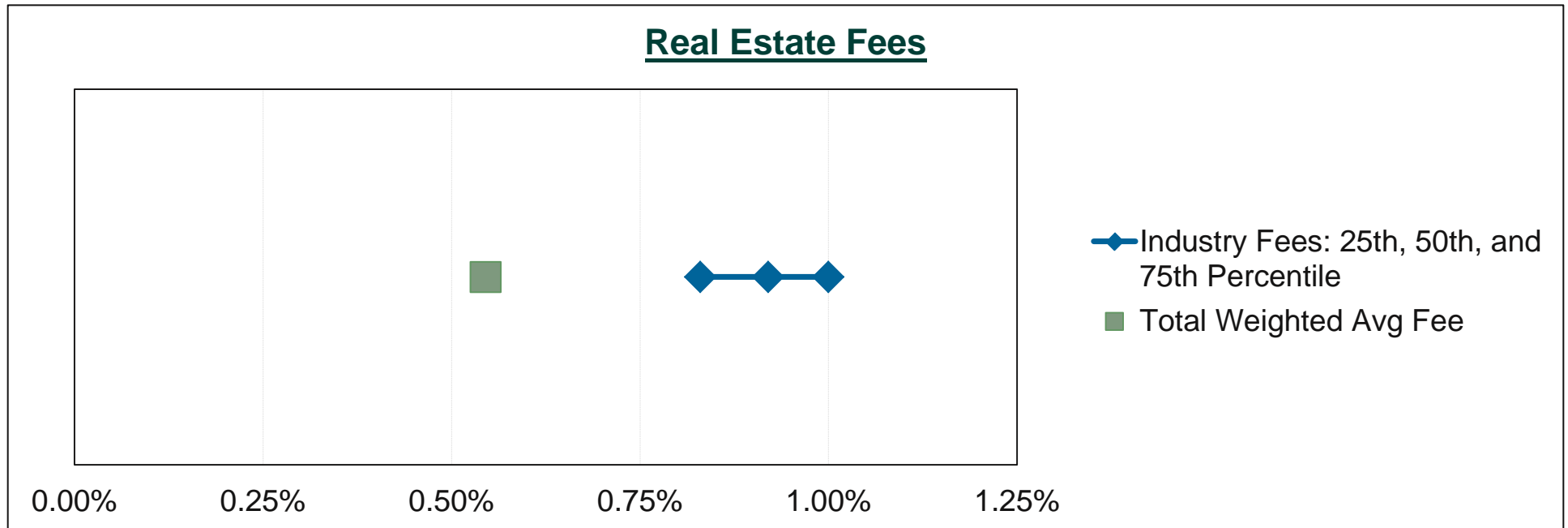
Diversified Real Assets	
Asset-Based Fee Strategies	Fee %
Western Asset Management TIPS	0.12%
Weighted Average Asset-Based Fee	0.12%
Performance and Hybrid Fee Strategies	Fee %
JP Morgan Infrastructure	0.67%
Grosvenor Infrastructure Fund II	1.16%
ISQ Global Infrastructure II	*
Weighted Average Performance and Hybrid Fee	1.47%
Total Weighted Average Real Assets Fee	0.53%
Industry Fee - 25th Percentile	0.73%
Industry Fee - Median	0.93%
Industry Fee - 75th Percentile	1.05%

N=23, Callan's Diversified Real Assets Peer Group

- JP Morgan Infrastructure Fund and Grosvenor Infrastructure Fund II charge a base management fee on assets and charge a performance fee for performance exceeding a “preferred” return set by the fund.
- *ISQ was added in the fourth quarter of fiscal year 2018. The management fee is charged on committed capital (the total amount that SIB is contractually obligated to invest), not invested capital (the amount actually invested). NDSIB’s committed amount is \$75 million; ISQ’s fee rate equates to a dollar payment during fiscal 2018 of \$1,068,405. SIB’s invested total with ISQ as of June 30, 2018 was \$4.0 million.

Real Estate

Legacy Trust



N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)

- Real Estate managers invest directly in real properties (e.g. offices, multi-family, retail, and other physical properties) and securities that gain access to such economic interests.
- North Dakota's average Real Estate account size for FY 2018 was \$137mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.55%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm

Real Estate

Legacy Trust

Real Estate	
Asset-Based Fee Strategies	Fee %
Invesco Core Real Estate	0.34%
JP Morgan Real Estate	0.74%
Total Weighted Average Real Estate Fee	0.55%
<hr/>	
Industry Fee - 25th Percentile	0.83%
Industry Fee - Median	0.92%
Industry Fee - 75th Percentile	1.00%

N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)

- All managers for this asset class fall into the asset-based fee category.

Cash

Legacy Trust

Cash and Equivalents	
Asset-Based Fee Strategies	Fee %
Bank of North Dakota Cash Account	0.00%
Northern Trust Cash Account	0.24%
Total Weighted Average Cash Equivalents Fee	0.17%

- The managers for this asset class fall into the asset-based fee category.
- North Dakota's average Cash account size for FY 2018 was \$21mm
- Fees for cash management are typically below 20 basis points (0.20%). Fees paid by the North Dakota State Investment Board's Legacy Trust cash management are well within industry norms.

Notes and Comments Regarding Report Measurements

NDSIB – Pension Trust, Insurance Trust, and Legacy Fund

- All market values, fee data and other information is as of the fiscal year ending June 30, 2018.
- Fee data was provided by NDSIB; no audit of the fees paid by NDSIB was conducted.
- Average account sizes are measured by using the balances at quarter-end for each quarter in the fiscal year 2018. To calculate the average value during the course of the fiscal year, the quarter-end assets (including zero values) for all four quarters were added together and divided by four.
 - In some cases, an account’s value changed significantly during the fiscal year due to external capital flows. These flows, especially when occurring intra-quarter, can skew the accuracy of some calculations.
- Fees charged by investment managers who did not have assets under management for the entire fiscal year are included in this study for only the period during which that manager was utilized.
- Investment managers employ three primary fee calculation methods to charge for their services;
 - **Asset-based fees:** fees are calculated as a percentage of assets under management
 - **Performance-based fees:** fees are calculated based on the manager’s ability to outperform a pre-specified benchmark during a contracted measurement period
 - **Hybrid fees:** base management fees are calculated as a percentage of assets under management and a performance fee is calculated based on the managers ability to outperform a pre-specified benchmark during a contracted measurement period.
- Regardless of the method used by a particular manager, Callan has calculated fees as a percentage of assets under management for each manager for the purposes of comparison.
- In many instances, fees paid by the individual trusts benefit from fee schedules that account for the aggregate level of assets invested with a particular manager or in a specific strategy.
- Fee universes used in the study reflect either **Actual Fees** paid by Callan clients in similar mandates, fees calculated using a universe of **Published Fees** representing manager fee schedules for similar mandates, or an Average of **Actual and Published Fee** universes where the actual fee universe was smaller than 10. All fee universes are explicitly noted beneath each chart where “n=” will denote the applicable sample size.