

November 2016



NDSIB Fee Study: Fiscal Year 2016

Pension Trust, Insurance Trust,
and Legacy Fund

Paul Erlendson

Senior Vice President

Alex Browning

Vice President

Andrea Biel

Assistant Vice President

Summary Notes and Comments

NDSIB – Pension Trust, Insurance Trust, and Legacy Fund

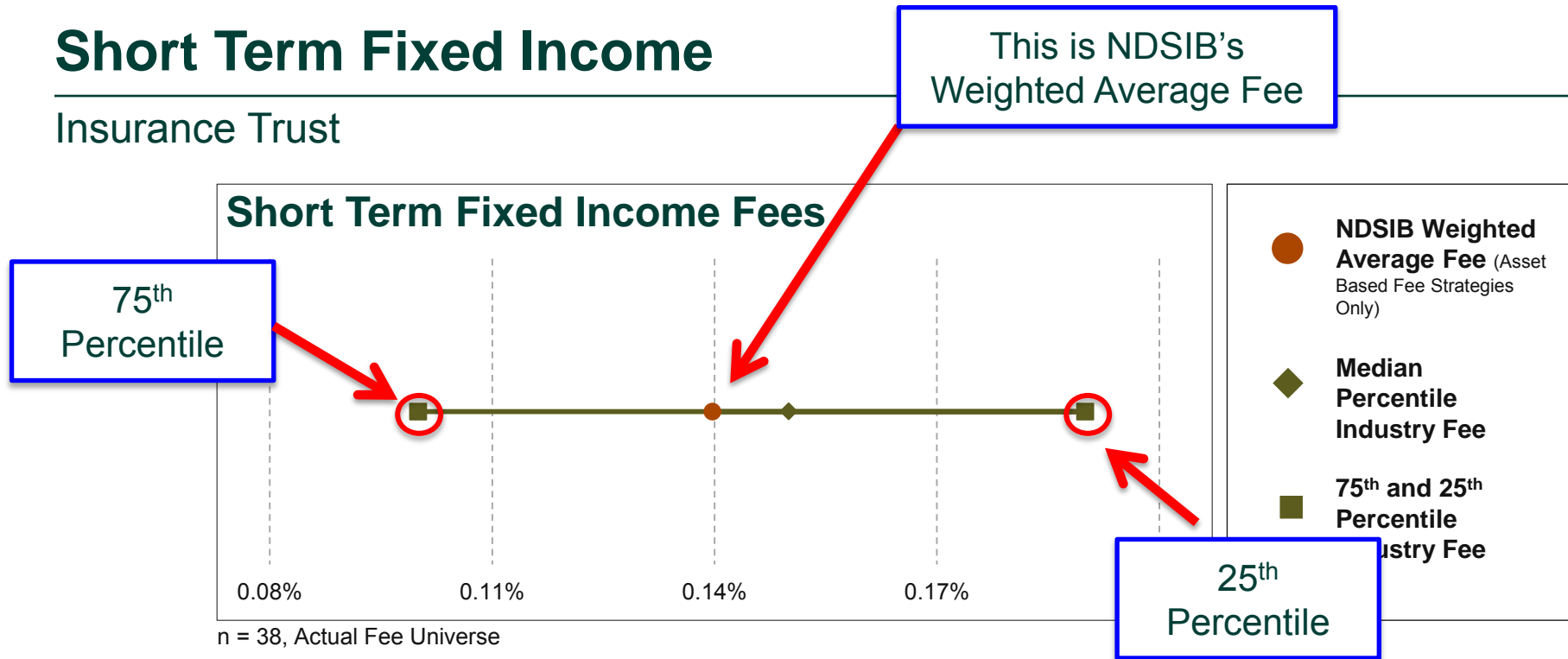
- All market values and fee data are as of the fiscal year ending June 30, 2016.
- Investment managers employ three primary fee calculation methods to charge for their services;
 - **AUM Based Fees:** fees are calculated as a percentage of assets under management
 - **Performance Based Fees:** fees are calculated on outperformance relative to a pre-specified benchmark during a contracted measurement period
 - **Hybrid Fees:** A combination of a low AUM based fee and a performance based fee schedule
- 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 clients in similar mandates,
 - **Published Fees** calculated using a universe of manager fee schedules for similar mandates, or;
 - An **Average of Actual & Published Fee** universes. This method was employed 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.
- Greater detail on fee measurements and data are available on the last page of the report.



Guide to Charts and Tables

Short Term Fixed Income

Insurance Trust



- Short Term Fixed Income managers invest in bonds that have short maturity dates.
- North Dakota's average account size for FY 2016 **\$253mm.**
- Red circle represents NDSIB Insurance Trust's asset based weighted average short-term fixed income mgmt. fee **0.14%.**
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes **greater than \$200mm.**

Investment Strategies – Short Term Fixed Income & Cash

Insurance Trust

Short Term Fixed Income	
AUM Based Fee Strategies	Fee %
JPM Short Term	0.11%
Babson Short Term	0.17%
Weighted Average AUM Based Fee	0.14%
Industry Fee - 25 th Percentile	0.19%
Industry Fee - Median	0.15%
Industry Fee - 75 th Percentile	0.10%
Total Weighted Average Fee	0.14%

Fee
Distribution

Cash & Equivalents	
AUM Based Fee Strategies	Fee %
Northern Trust Cash Account	0.14%
Weighted Average AUM Based Fee	0.14%
Total Weighted Average Fee	0.14%

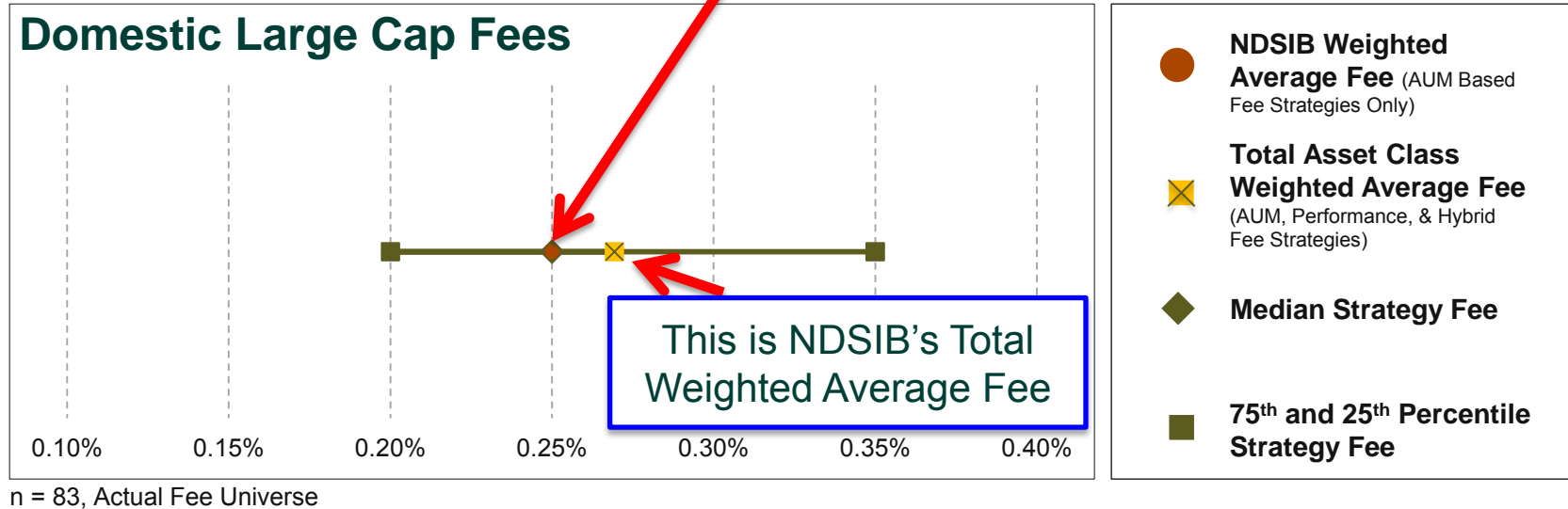
The table
summarizes the data
behind the chart

Sometimes, no
universe exists

- All managers for this asset class fall into the asset based fee category.
- 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.
- Note that the Legacy Fund cash allocation is included in the Insurance Trust Cash Account

Domestic Large Cap Equity

Legacy Fund



- Domestic Large Cap Equity managers invest in large company stocks that are typically listed within the U.S.
- North Dakota's average account size for FY 2016: \$233mm.
- Red circle represents NDSIB Legacy Fund's asset based weighted average large cap equity mgmt. fee: 0.25%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.27%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes of greater than \$200mm.

Investment Strategies – Domestic Large Cap Equity

Legacy Fund

Domestic Large Cap Equity	
AUM Based Fee Strategies	Fee %
L.A. Capital Growth	0.21%
LSV Asset Management	0.29%
Weighted Average AUM Based Fee	0.25%
Industry Fee - 25 th Percentile	0.35%
Industry Fee - Median	0.25%
Industry Fee - 75 th Percentile	0.20%
Performance & Hybrid Fee Strategies	Fee %
L.A. Capital Enhanced Index	0.33%
Parametric Clifton Enhanced S&P 500	0.26%
Total Weighted Average Fee	0.27%

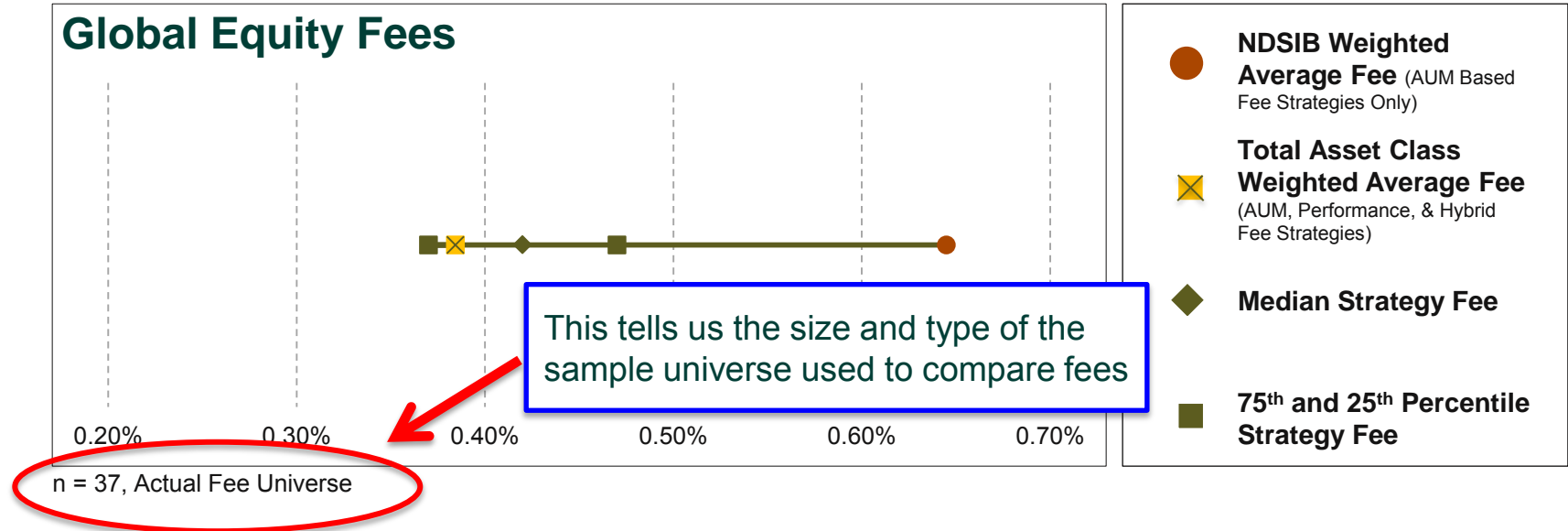
AUM Based Fees

Performance and Hybrid
Based Fees

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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 return is charged on approximately 40% of the assets.
 - Parametric Clifton Enhanced Index charges no base management fee. The manager is paid 35% of any excess return above the benchmark. Fees are paid annually for performance through June 30.

Global Equity

Pension Trust




- Global equity managers invest in stocks traded in both U.S. and non-U.S. markets.
- North Dakota's average account size for FY 2016: \$326mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average global equity mgmt. fee: 0.64%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.38%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes of greater than \$200mm.

Investment Strategies – Global Equity

Pension Trust

Global Equity	
AUM Based Fee Strategies	Fee %
EPOCH Inv. Partners	0.64%
Weighted Average AUM Based Fee	0.64%
Industry Fee - 25 th Percentile	0.47%
Industry Fee - Median	0.42%
Industry Fee - 75 th Percentile	0.37%
Performance & Hybrid Fee Strategies	Fee %
LSV Asset Management	0.18%
Total Weighted Average Fee	0.38%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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%.



The text provides more detail on how a particular fee was calculated and or had and effect on the total weighted average



Pension Trust

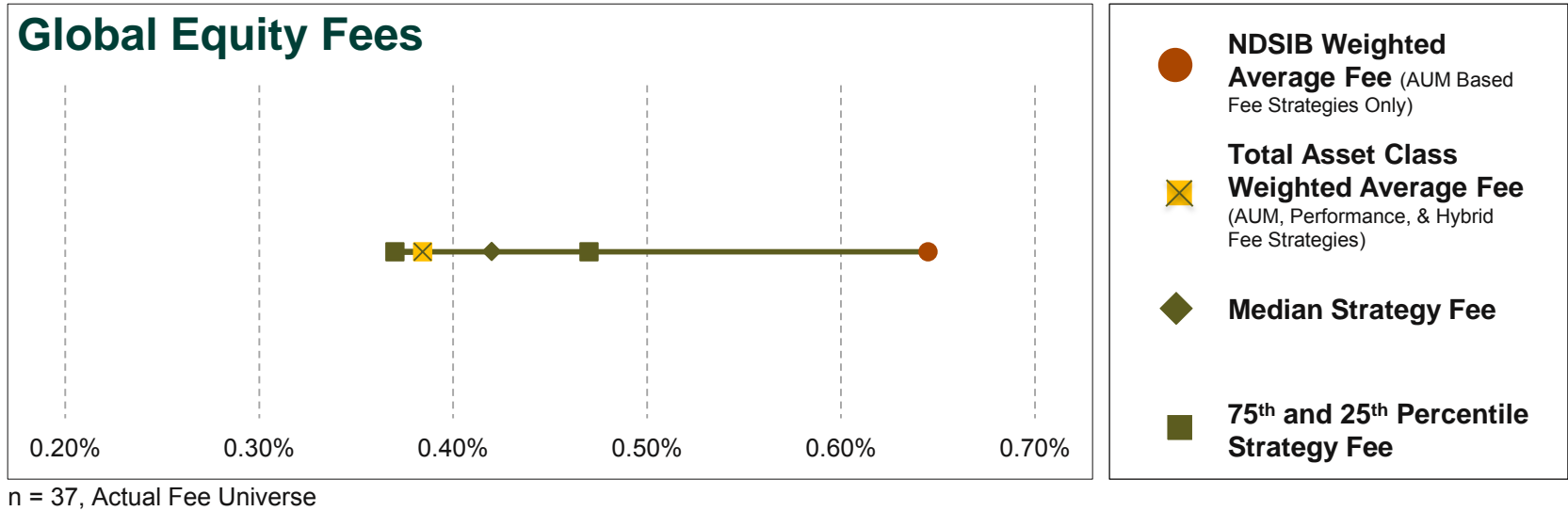
Pension Trust

NDSIB Fee Study Fiscal Year 2016 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 equal to or below their respective medians.
 - Total Global Equity fees fell below their respective distribution median helped in part by performance/hybrid fee based strategies
 - Total Domestic Large Cap Equity fees were equal to the fee distribution median with performance/hybrid fee based strategies displaying a wide range
 - Total Small Cap Equity fees were close to the 75th percentile with asset-based fees falling closer to median
 - Developed International Equity fees were well below the 75th percentile and represented only asset-based fee strategies
 - Emerging Market Equity fees fell just below 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. In aggregate fees for Investment Grade, Below Investment Grade, and International Fixed Income displayed a broad range.
 - Total Investment Grade Fixed Income fees paid were above the 25th percentile, driven largely by performance/hybrid fee based strategies
 - Total Below Investment Grade Fixed Income fees paid were above the 25th percentile, driven largely by performance/hybrid fee based strategies
 - Total International Fixed Income fees paid were below median 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 75th percentile with performance/hybrid fee strategies pushing the total fees paid just above the 25th percentile.
 - Due to the custom nature of non-core real estate 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 comparison
- Total Real Assets represents a wide variety of inflation sensitive strategies ranging from Domestic Timber and Infrastructure to Asian 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

Global Equity

Pension Trust



- Global equity managers invest in stocks traded in both U.S. and non-U.S. markets.
- North Dakota's average account size for FY 2016: \$326mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average global equity mgmt. fee: 0.64%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.38%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes of greater than \$200mm.

Investment Strategies – Global Equity

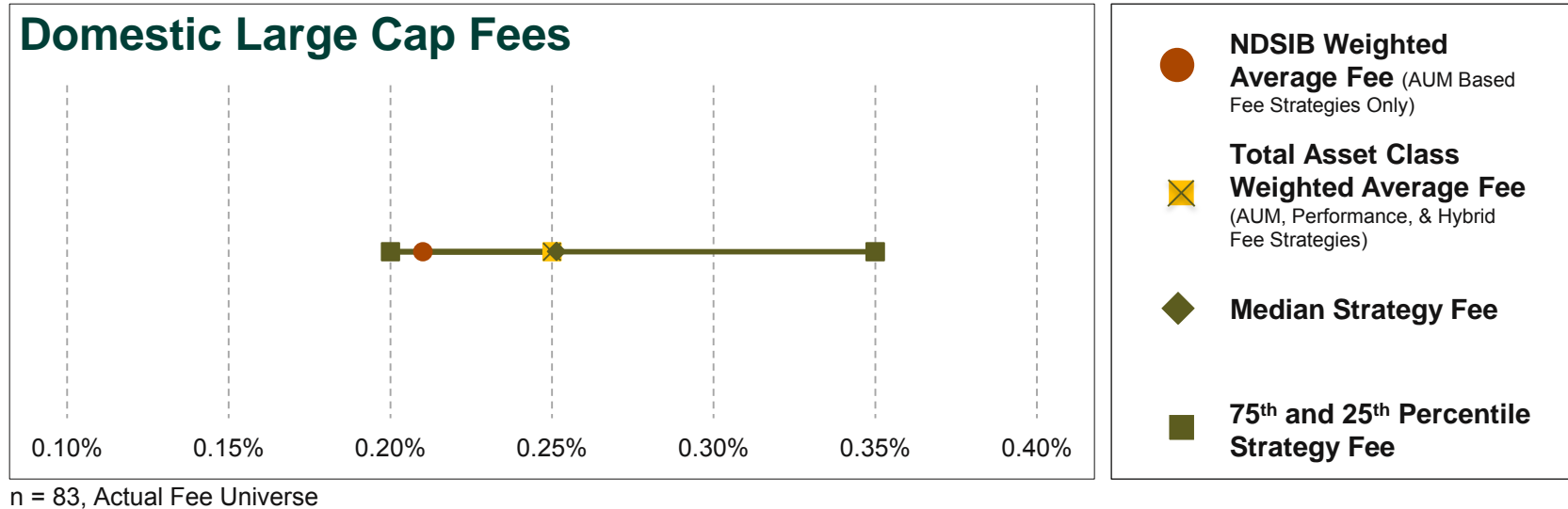
Pension Trust

Global Equity	
AUM Based Fee Strategies	Fee %
EPOCH Inv. Partners	0.64%
Weighted Average AUM Based Fee	0.64%
Industry Fee - 25 th Percentile	0.47%
Industry Fee - Median	0.42%
Industry Fee - 75 th Percentile	0.37%
Performance & Hybrid Fee Strategies	Fee %
LSV Asset Management	0.18%
Total Weighted Average Fee	0.38%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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



- Domestic Large Cap Equity managers invest in large company stocks that are typically listed and traded within the U.S.
- North Dakota's average account size for FY 2016: \$306mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average large cap equity mgmt. fee: 0.21%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.25%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes of greater than \$200mm.

Investment Strategies – Domestic Large Cap Equity

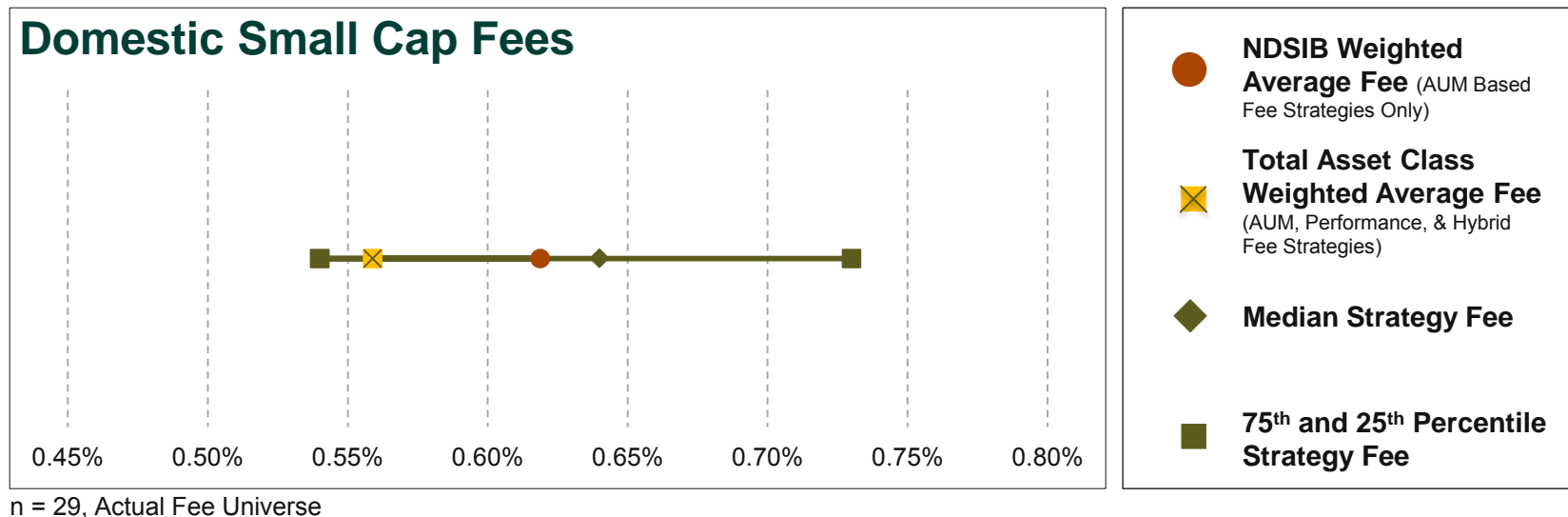
Pension Trust

Domestic Large Cap Equity	
AUM Based Fee Strategies	Fee %
L.A. Capital Growth	0.21%
Weighted Average AUM Based Fee	0.21%
Industry Fee - 25 th Percentile	0.35%
Industry Fee - Median	0.25%
Industry Fee - 75 th Percentile	0.20%
Performance & Hybrid Fee Strategies	Fee %
L.A. Capital Enhanced Index	0.53%
Northern Trust Enhanced S&P 500	0.00%
Parametric Clifton Enhanced S&P 500	0.22%
Total Weighted Average Fee	0.25%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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. Fees are calculated and paid quarterly.
 - 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.

Domestic Small Cap Equity

Pension Trust



- Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S.
- North Dakota's average account size for FY 2016: \$111mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average domestic small cap equity mgmt. fee: 0.62%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.56%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Domestic Small Cap Equity

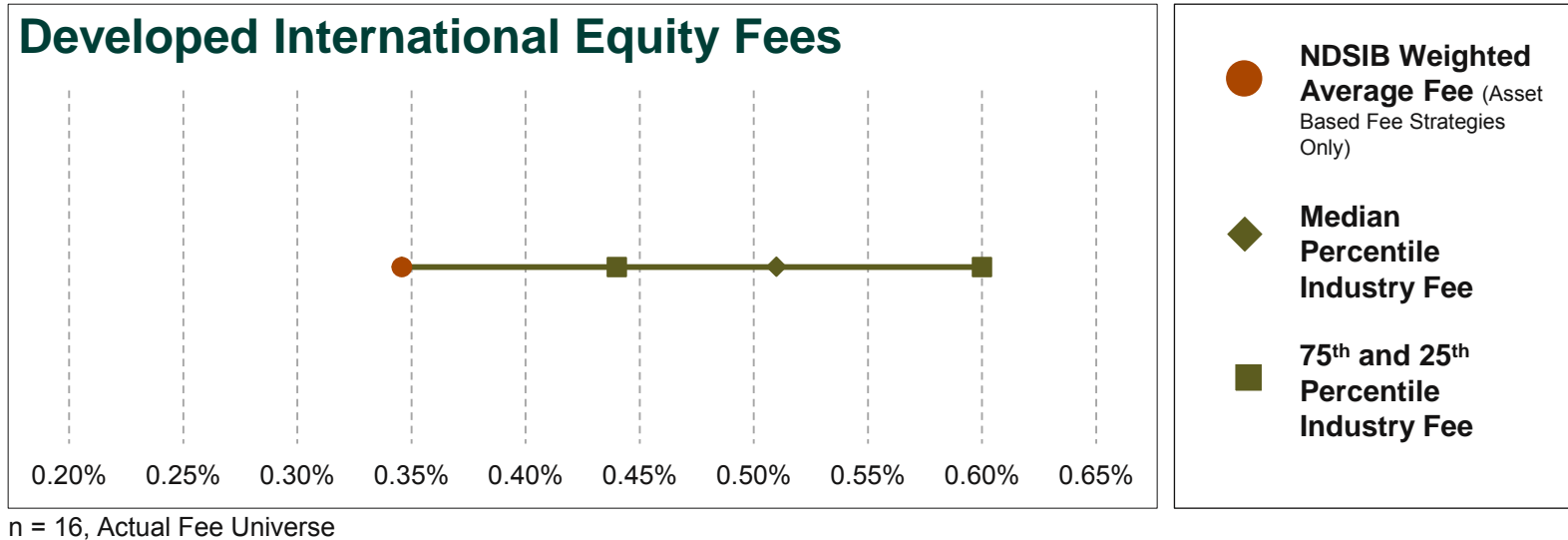
Pension Trust

Domestic Small Cap Equity	
AUM Based Fee Strategies	Fee %
Callan Diversified Alpha Group Trust	0.43%
Atlanta Capital	0.18%
Weighted Average AUM Based Fee	0.62%
Industry Fee - 25 th Percentile	0.73%
Industry Fee - Median	0.64%
Industry Fee - 75 th Percentile	0.54%
Performance & Hybrid Fee Strategies	Fee %
Parametric Clifton Enhanced Small Cap	0.50%
Total Weighted Average Fee	0.56%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 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 Callan Diversified Alpha Group Trust was terminated in March 2016 and the proceeds were used to fund Atlanta Capital in April 2016.

Developed International Equity

Pension Trust



- 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 account size for FY 2016: \$122mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average developed international equity mgmt. fee: 0.35%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Developed International Equity

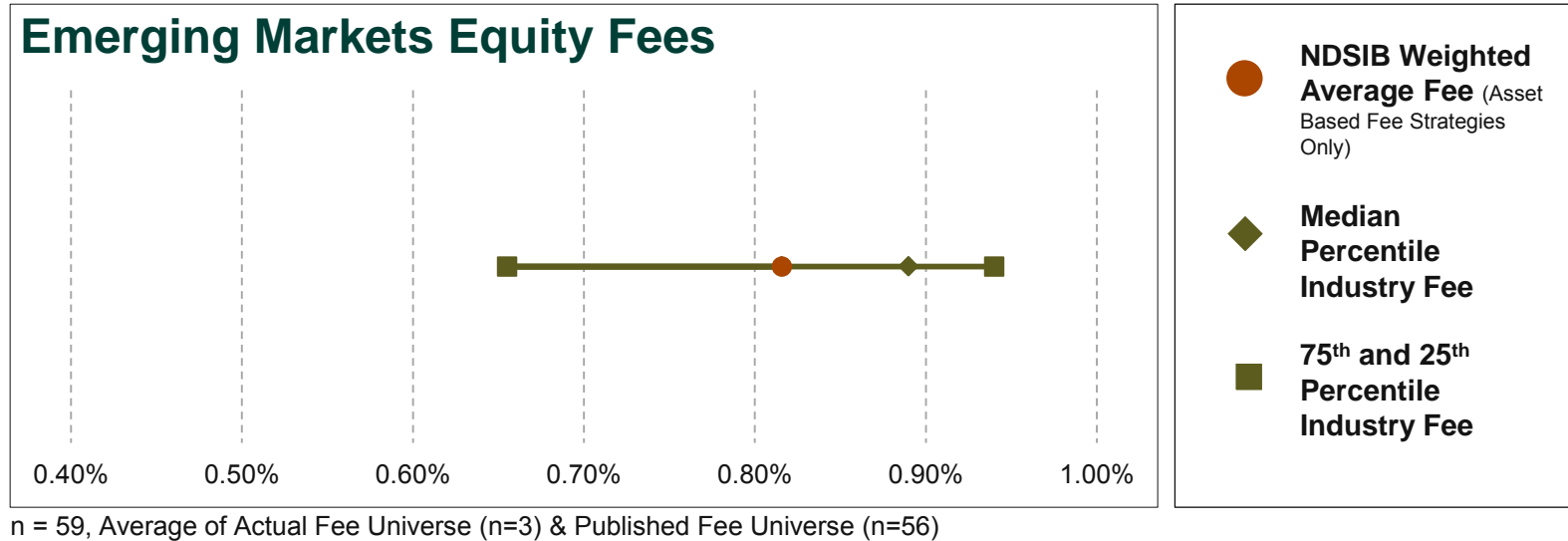
Pension Trust

Developed International Equity	
AUM Based Fee Strategies	Fee %
Capital Guardian Trust	0.50%
DFA International Small Cap Value	0.66%
Northern Trust World ex-US	0.03%
Wellington Intl SC Opp	0.85%
William Blair	0.03%
Weighted Average AUM Based Fee	0.35%
Industry Fee - 25 th Percentile	0.60%
Industry Fee - Median	0.51%
Industry Fee - 75 th Percentile	0.44%
Total Weighted Average Fee	0.35%

- All managers for this asset class fall into the asset based fee category.
- Note that Capital Guardian Trust was terminated in May 2016 and the proceeds were used to fund William Blair in June 2016

Emerging Markets Equity

Pension Trust



- Emerging Markets Equity managers invest in stocks that gain exposure to emerging market economies.
- North Dakota's average account size: \$80mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average emerging markets equity mgmt. fee: 0.82%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$75mm and \$100mm.

Investment Strategies – Emerging Markets Equity

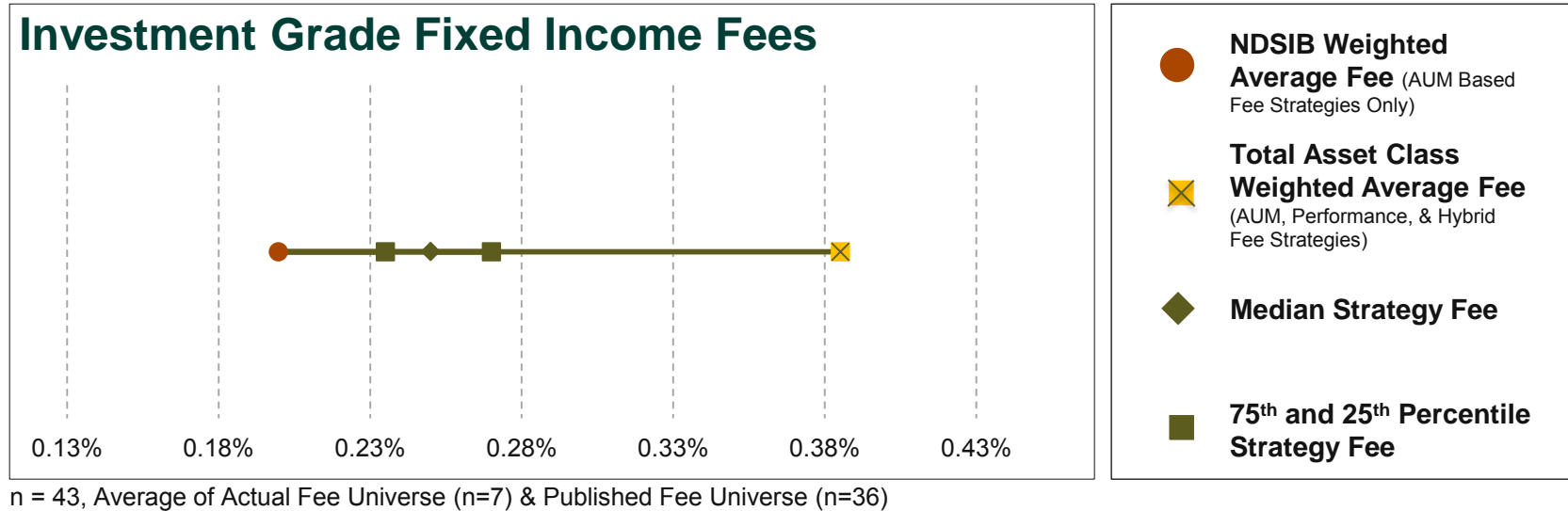
Pension Trust

Emerging Markets Equity	
AUM Based Fee Strategies	Fee %
DFA Emerging	0.62%
Axiom	0.88%
Weighted Average AUM Based Fee	0.82%
Industry Fee - 25 th Percentile	0.94%
Industry Fee - Median	0.89%
Industry Fee - 75 th Percentile	0.66%
Total Weighted Average Fee	0.82%

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

Investment Grade Fixed Income

Pension Trust



- 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 account size for FY 2016: \$108mm.
- Red circle represents NDSIB Pension Trust’s asset based weighted average investment grade fixed income mgmt. fee: 0.15%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.39%
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan’s 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Investment Grade Fixed Income

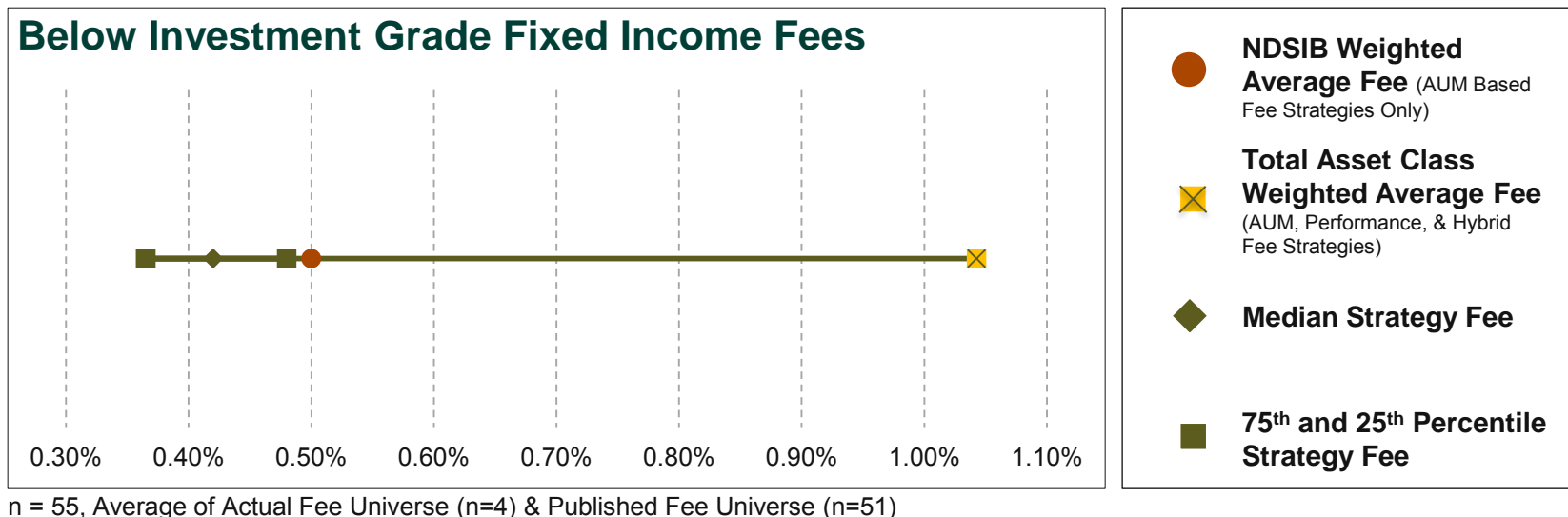
Pension Trust

Investment Grade Fixed Income	
AUM Based Fee Strategies	Fee %
SSgA Long U.S. Treasury Index	0.04%
JP Morgan MBS	0.21%
PIMCO MBS	0.17%
PIMCO Unconstrained	0.10%
Declaration Total Return	0.46%
Weighted Average AUM Based Fee	0.20%
Industry Fee - 25 th Percentile	0.27%
Industry Fee - Median	0.25%
Industry Fee - 75 th Percentile	0.24%
Performance & Hybrid Fee Strategies	Fee %
PIMCO DiSCO II	1.46%
Total Weighted Average Fee	0.39%

- Declaration Total Return charges an AUM Based Fee of 0.60%. 1/12 of the AUM 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.
- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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.

Below Investment Grade Fixed Income

Pension Trust



- 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 account size for FY 2016: \$197mm.
- Red circle represents NDSIB Pension Trust’s asset based weighted average below I.G. fixed income mgmt. fee: 0.50%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 1.04%
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan’s 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Below Investment Grade Fixed Income

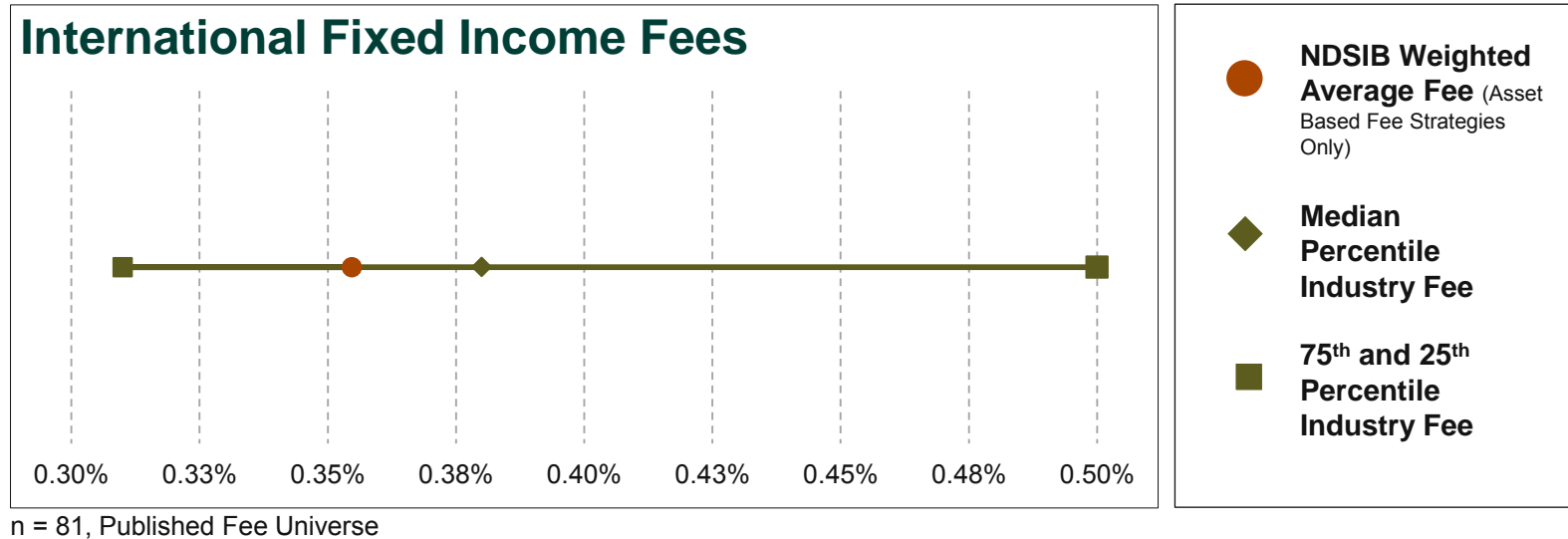
Pension Trust

Below Investment Grade Fixed Income	
AUM Based Fee Strategies	Fee %
Loomis Sayles	0.50%
Weighted Average AUM Based Fee	0.50%
Industry Fee - 25 th Percentile	0.48%
Industry Fee - Median	0.42%
Industry Fee - 75 th Percentile	0.37%
Performance & Hybrid Fee Strategies	Fee %
Goldman Sachs 2006 Offshore	1.27%
Goldman Sachs V Offshore	8.13%
PIMCO Bravo Fund II	3.05%
Total Weighted Average Fee	1.04%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 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. No performance fee was charged for the 2006 Offshore fund.
 - 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%.

International Fixed Income

Pension Trust



- 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 account size for FY 2016: \$118mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average international fixed income mgmt. fee: 0.35%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using published active management fee schedules from Callan's International Fixed Income Peer Group, using a mandate size between \$100mm and \$200mm.

Investment Strategies – International Fixed Income

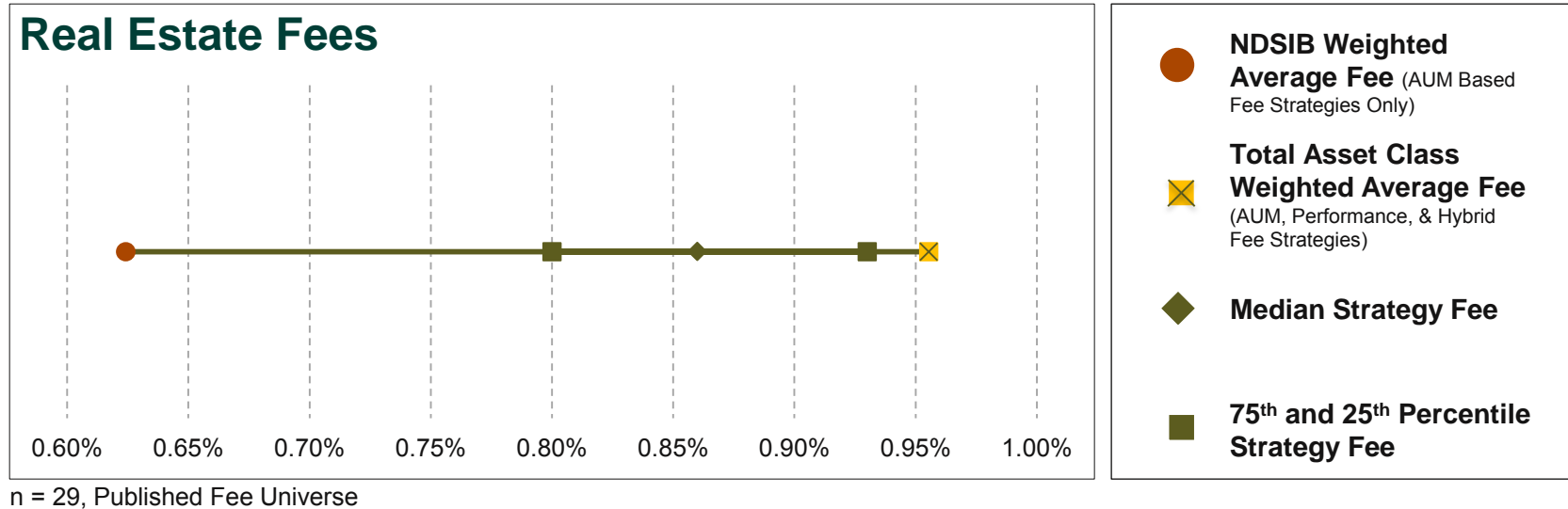
Pension Trust

International Fixed Income	
AUM Based Fee Strategies	Fee %
Brandywine	0.38%
UBS Global Asset Management	0.32%
Weighted Average AUM Based Fee	0.35%
Industry Fee - 25 th Percentile	0.50%
Industry Fee - Median	0.38%
Industry Fee - 75 th Percentile	0.31%
Total Weighted Average Fee	0.35%

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

Real Estate

Pension Trust



- 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 account size: \$195mm.
- Red circle represents NDSIB Pension Trust's asset based weighted average real estate mgmt. fee: 0.62%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.96%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using published fee schedules from Callan's Real Estate Manager Peer Group, using a mandate size between \$100mm and \$200mm.

Investment Strategies – Real Estate

Pension Trust

Real Estate	
AUM Based Fee Strategies	Fee %
INVESCO Core Real Estate	0.34%
JP Morgan Special & Strategic	0.95%
Weighted Average AUM Based Fee	0.62%
Industry Fee - 25th Percentile	0.93%
Industry Fee - Median	0.86%
Industry Fee - 75th Percentile	0.80%

Real Estate	
Performance & Hybrid Fee Strategies	Fee %
INVESCO Real Estate Fund II	0.50%
INVESCO Real Estate Fund III	4.45%
INVESCO Asia RE Feeder	2.48%
INVESCO Asia RE Fund III	0.99%
INVESCO Value Added Fund IV	2.74%
J.P. Morgan Alternative Property Fd.	0.00%
JP Morgan Greater China Fund	0.73%
JP Morgan Greater European Opp	0.63%

Total Weighted Average Fee	0.96%
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- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 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 charges a performance fee of 20% for performance exceeding a “preferred” return set by each fund.
 - The JP Morgan Greater China Fund and JP Morgan Greater European Opportunity Fund each charge a base management fee on assets and then charges a sliding scale performance fee for performance exceeding a series of “preferred” returns set by each fund.
 - The JP Morgan Alternative Fund is currently being liquidated. The manager is not presently charging a fee to manage this fund during liquidation.

Investment Strategies – Real Assets

Pension Trust

Real Assets	
Timber	Fee %
TIR - Teredo	0.58%
TIR - Springbank	-1.96%
Weighted Average Timber Fee	-1.31%
Infrastructure	Fee %
JP Morgan Asian Infrastructure	1.55%
JP Morgan Infrastructure Inv. Fund	0.90%
Grosvenor Infrastructure Fund I	0.97%
Grosvenor Infrastructure Fund II	2.96%
Weighted Average Infrastructure Fee	1.05%
Total Weighted Average Fee	0.05%

- Due to the highly varied and customized approach of strategies in these asset classes, Callan cannot produce reasonable industry fee universes for comparison.
 - TIR Teredo and Springbank charge a base management fee on assets and charge a performance fee for performance exceeding a “preferred” return set by each fund.
 - The total asset class weighted average fee for Timber for FY 2016 was -1.31%. The negative fee represents a rebate of incentive fees from the Springbank portfolio as a result of a miscalculation of prior period incentive fees.
 - The Grosvenor Infrastructure Fund I and II charge a base management fee on assets and charge a performance fee for performance exceeding a “preferred” return set by each fund.
 - JP Morgan Asian Infrastructure and Infrastructure Investment Funds charge a base management fee on assets and charge a performance fee for performance exceeding a “preferred” return set by each fund.

Investment Strategies – Private Equity

Pension Trust

- Due to the highly varied and customized approach of Private Equity strategies, Callan cannot produce a reasonable industry fee universe for comparison.
- At the end of fiscal year 2016 private equity accounted for 3.37% of Total Fund assets.
- Total asset class weighted average fee for FY 2016: 1.80%
- Similar to the fiscal 2014 fee study, the management fees for NDSIB's private equity portfolio are at levels for similar strategies and are in line with industry norms.

Investment Strategies – Cash

Pension Trust

Cash	
Northern Trust Cash	0.11%

- The manager for this asset class fall into the asset based fee category.
- Fees for cash management are typically below 20 basis points (0.20%). Fees paid by the North Dakota State Investment Board’s Pension Trust cash management are well within industry norms.



Insurance Trust

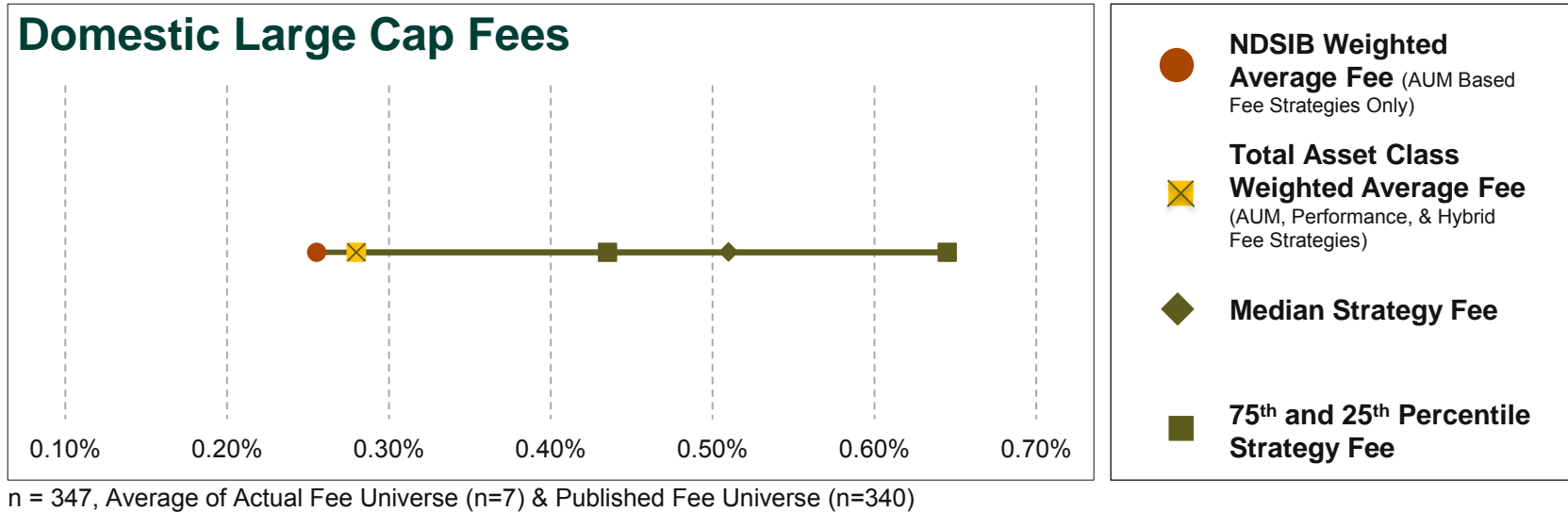
Insurance Trust

NDSIB Fee Study Fiscal Year 2016 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 75th percentiles.
 - Total Domestic Large Cap Equity fees were well below the 75th percentile
 - Total Small Cap Equity fees were well below the 75th percentile with asset-based fees even lower
 - Total Developed International Equity fees were well below the 75th 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 25th percentile, driven largely by performance/hybrid fee based strategies while total asset based fee strategies were well below the 75th percentile
- 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 75th percentile with performance/hybrid fee strategies pushing the total fees paid well above 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 75th percentile
- Short-term Fixed Income manager fees paid represented asset based fee strategies only.
 - Fees paid fell below the strategy universe median

Domestic Large Cap Equity

Insurance Trust



- Large Cap Equity managers invest in large company stocks that are typically listed within the U.S.
- North Dakota's average account size for FY 2016: \$68mm.
- Red circle represents NDSIB Insurance Trust's asset based weighted average large cap equity mgmt. fee: 0.26%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.28%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$50mm and \$75mm.

Investment Strategies – Domestic Large Cap Equity

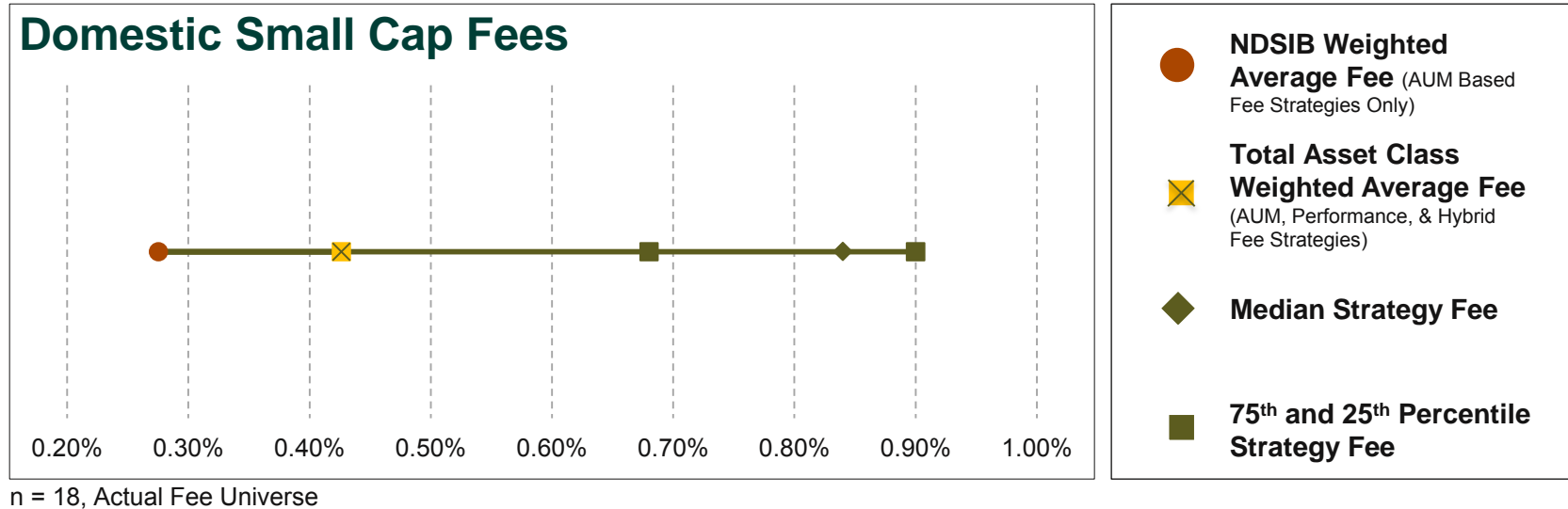
Insurance Trust

Domestic Large Cap Equity	
AUM Based Fee Strategies	Fee %
L.A. Capital Growth	0.21%
LSV Asset Management	0.30%
Weighted Average AUM Based Fee	0.26%
Industry Fee - 25 th Percentile	0.65%
Industry Fee - Median	0.51%
Industry Fee - 75 th Percentile	0.44%
Performance & Hybrid Fee Strategies	Fee %
L.A. Capital Enhanced Index	0.43%
Parametric Clifton Enhanced S&P 500	0.20%
Total Weighted Average Fee	0.28%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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 return is charged on approximately 40% of the assets.
 - Parametric Clifton Enhanced Index charges no base management fee. The manager is paid 35% of any excess return above the benchmark. Fees are paid annually for performance through June 30.

Domestic Small Cap Equity

Insurance Trust



- Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S.
- North Dakota's average account size for FY 2016: \$28mm.
- Red circle represents NDSIB Insurance Trust's asset based weighted average domestic small cap equity mgmt. fee: 0.28%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.43%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$25mm and \$50mm.

Investment Strategies – Domestic Small Cap Equity

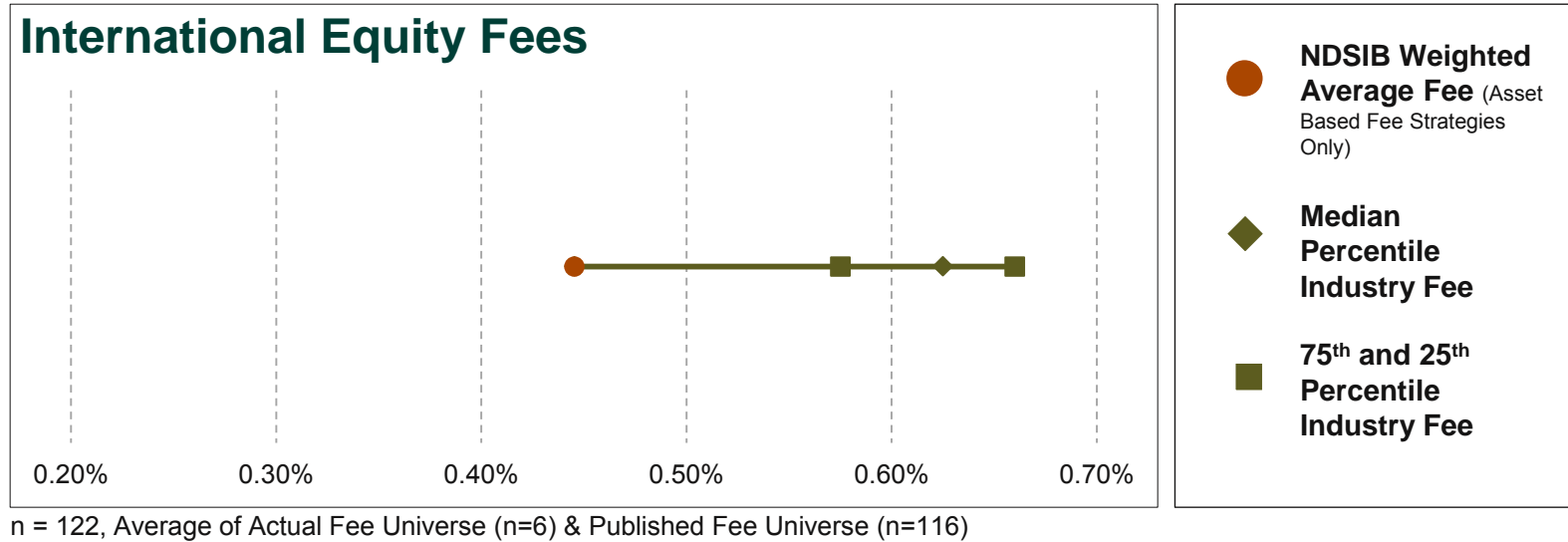
Insurance Trust

Domestic Small Cap Equity	
AUM Based Fee Strategies	Fee %
PIMCO (Research Affiliates)	0.28%
Weighted Average AUM Based Fee	0.28%
Industry Fee - 25 th Percentile	0.90%
Industry Fee - Median	0.84%
Industry Fee - 75 th Percentile	0.68%
Performance & Hybrid Fee Strategies	Fee %
Parametric Clifton Enhanced Index	0.51%
Total Weighted Average Fee	0.43%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 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.

Developed International Equity

Insurance Trust



- 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 account size for FY 2016: \$41mm.
- Red circle represents NDSIB Insurance Trust's asset based weighted average developed int'l equity mgmt. fee: 0.45%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$25mm and \$50mm.

Investment Strategies – Developed International Equity

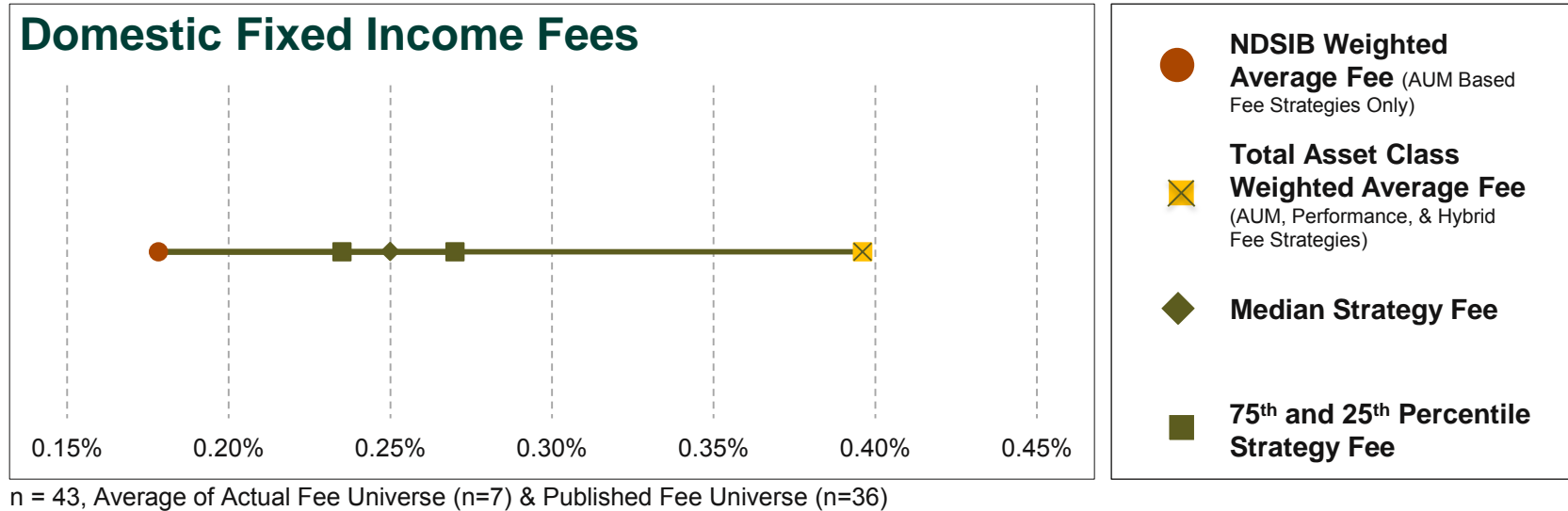
Insurance Trust

International Equity	
AUM Based Fee Strategies	Fee %
Capital Guardian	0.59%
DFA Int'l Small Cap	0.65%
LSV Asset Management	0.39%
Vanguard Int'l Explorer Fund	0.35%
William Blair	0.04%
Weighted Average AUM Based Fee	0.45%
Industry Fee - 25 th Percentile	0.66%
Industry Fee - Median	0.63%
Industry Fee - 75 th Percentile	0.58%
Total Weighted Average Fee	0.45%

- All managers for this asset class fall into the asset based fee category.
- Note that Capital Guardian Trust was terminated in May 2016 and the proceeds were used to fund William Blair in June 2016.

Domestic Fixed Income

Insurance Trust



- Domestic Fixed Income managers invest in bonds and other debt instruments.
- North Dakota's average account size for FY 2016: \$184mm.
- Red circle represents NDSIB Insurance Trust's asset based weighted average domestic fixed income mgmt. fee: 0.18%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.40%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Domestic Fixed Income

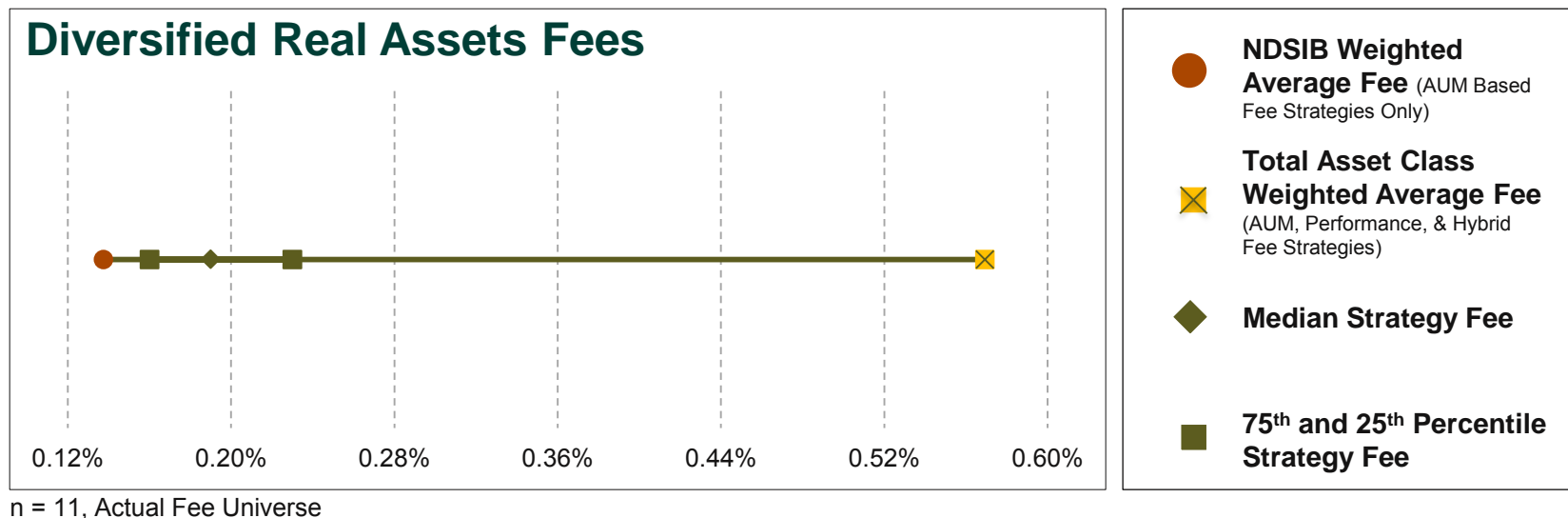
Insurance Trust

Domestic Fixed Income	
AUM Based Fee Strategies	Fee %
Declaration of Total Return	0.46%
Prudential	0.27%
SSgA U.S. Govt Credit Bond Index	0.03%
Wells Capital	0.18%
Western Asset Management	0.14%
Weighted Average AUM Based Fee	0.18%
Industry Fee - 25 th Percentile	0.27%
Industry Fee - Median	0.25%
Industry Fee - 75 th Percentile	0.24%
Performance & Hybrid Fee Strategies	Fee %
PIMCO DiSCO II	1.46%
PIMCO Bravo II	3.05%
Total Weighted Average Fee	0.40%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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%.
 - The Legacy Fund participates in the two PIMCO Funds within the Insurance Trust.

Diversified Real Assets

Insurance Trust



- Diversified Real Assets managers invest in assets that are expected to perform well during periods of inflation.
- North Dakota's average account size: \$110mm.
- Red circle represents NDSIB Insurance Trust's asset based weighted average domestic fixed income mgmt. fee: 0.14%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.57%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Diversified Real Assets

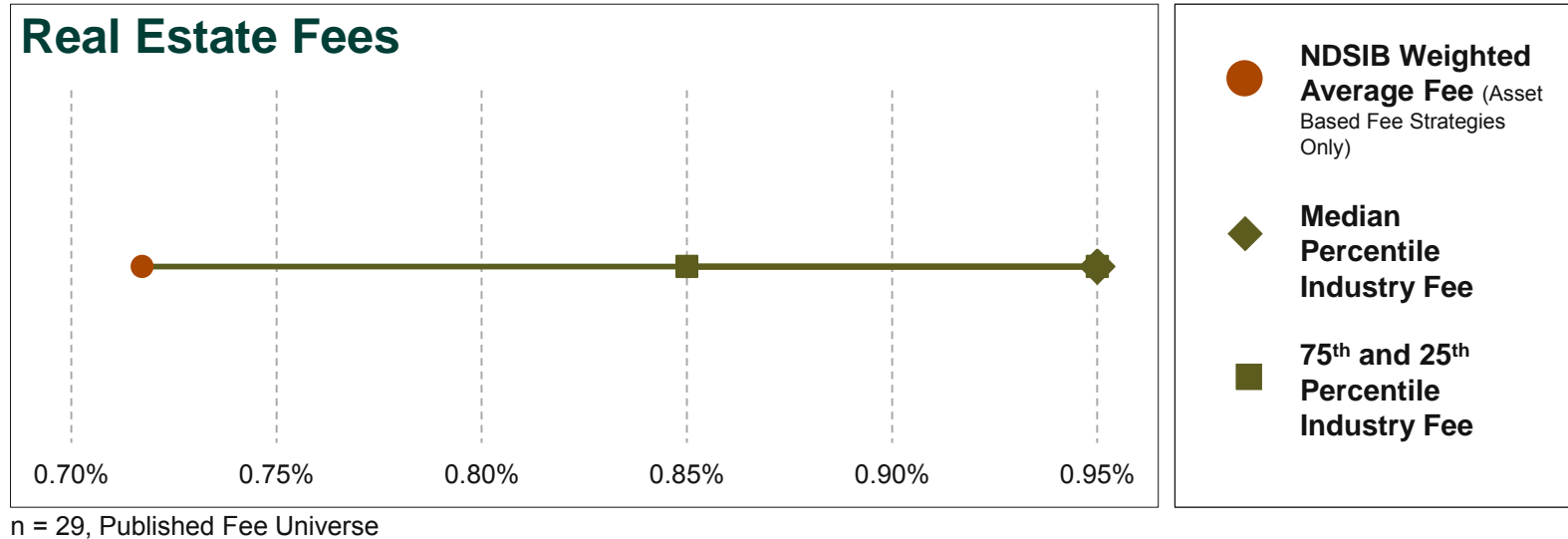
Insurance Trust

Diversified Real Assets	
AUM Based Fee Strategies	Fee %
Western Asset Management	0.14%
Weighted Average AUM Based Fee	0.14%
Industry Fee - 25 th Percentile	0.23%
Industry Fee - Median	0.19%
Industry Fee - 75 th Percentile	0.16%
Performance & Hybrid Fee Strategies	Fee %
JP Morgan Infrastructure	0.90%
Grosvenor Infrastructure Fund I	0.97%
TIR - Eastern Timber Opportunities	0.82%
Total Weighted Average Fee	0.57%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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



- 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 account size: \$63mm.
- Red circle represents NDSIB Insurance Trust's asset based weighted average real estate mgmt. fee: 0.72%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using published fee schedules from Callan's Real Estate Manager Peer Group, using a mandate size between \$50mm and \$75mm.

Investment Strategies – Real Estate

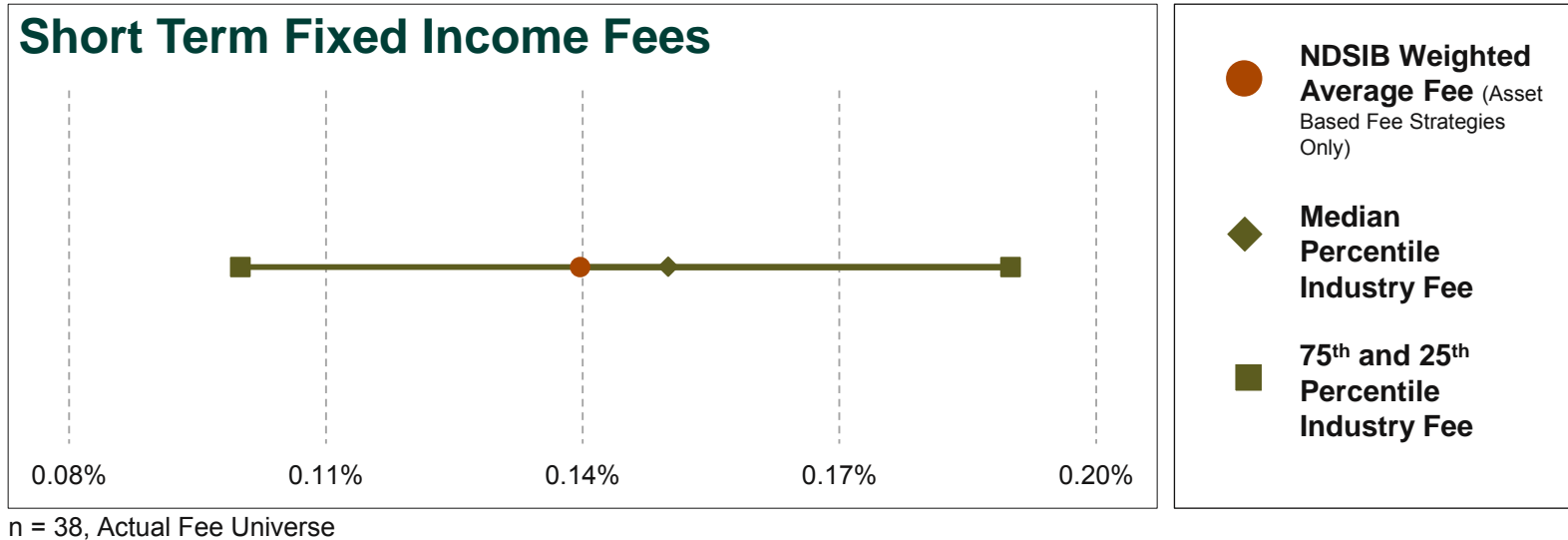
Insurance Trust

Real Estate	
AUM Based Fee Strategies	Fee %
Invesco Core Real Estate	0.34%
JP Morgan Real Estate	1.05%
Weighted Average AUM Based Fee	0.72%
Industry Fee - 25 th Percentile	0.95%
Industry Fee - Median	0.95%
Industry Fee - 75 th Percentile	0.85%
Total Weighted Average Fee	0.72%

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

Short Term Fixed Income

Insurance Trust



- Short Term Fixed Income managers invest in bonds that have short maturity dates.
- North Dakota's average account size for FY 2016: \$253mm.
- Red circle represents NDSIB Insurance Trust's asset based weighted average short-term fixed income mgmt. fee: 0.14%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes greater than \$200mm.

Investment Strategies – Short Term Fixed Income & Cash

Insurance Trust

Short Term Fixed Income	
AUM Based Fee Strategies	Fee %
JPM Short Term	0.11%
Babson Short Term	0.17%
Weighted Average AUM Based Fee	0.14%
Industry Fee - 25 th Percentile	0.19%
Industry Fee - Median	0.15%
Industry Fee - 75 th Percentile	0.10%
Total Weighted Average Fee	0.14%

Cash & Equivalents	
AUM Based Fee Strategies	Fee %
Northern Trust Cash Account	0.14%
Weighted Average AUM Based Fee	0.14%
Total Weighted Average Fee	0.14%

- All managers for this asset class fall into the asset based fee category.
- 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.
- Note that the Legacy Fund cash allocation is included in the Insurance Trust Cash Account.



Legacy Fund

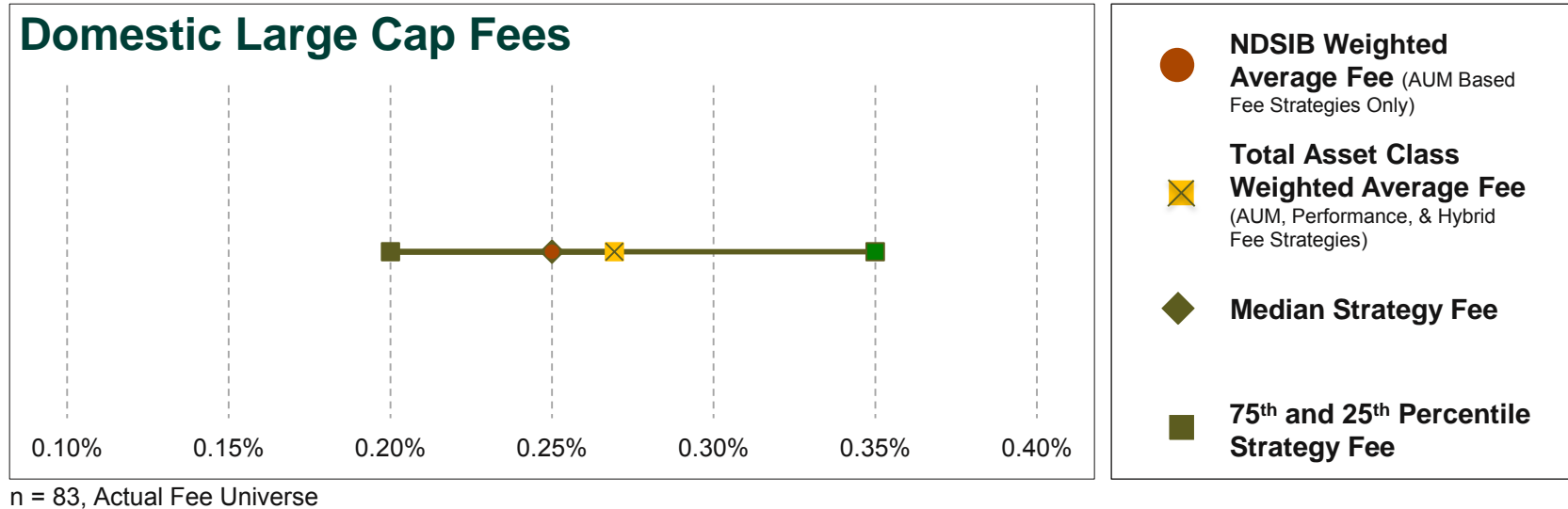
Legacy Trust

NDSIB Fee Study Fiscal Year 2016 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 just above median being pushed up slightly by performance based fee strategies
 - Total Small Cap Equity fees were well below the 75th percentile with asset-based fee strategies lower than performance/hybrid based fee strategies
 - Developed International Equity fees were below the 75th percentile and represented only asset-based fee strategies
- Total Domestic Fixed Income Manager fees paid represented asset based fee strategies only.
 - Total Domestic Fixed Income fees paid were below median but above the 75th percentile
- 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 median with performance/hybrid fee strategies pushing the total fees paid well above 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 75th percentile

Domestic Large Cap Equity

Legacy Fund



- Domestic Large Cap Equity managers invest in large company stocks that are typically listed within the U.S.
- North Dakota's average account size for FY 2016: \$233mm.
- Red circle represents NDSIB Legacy Fund's asset based weighted average large cap equity mgmt. fee: 0.25%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.27%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes of greater than \$200mm.

Investment Strategies – Domestic Large Cap Equity

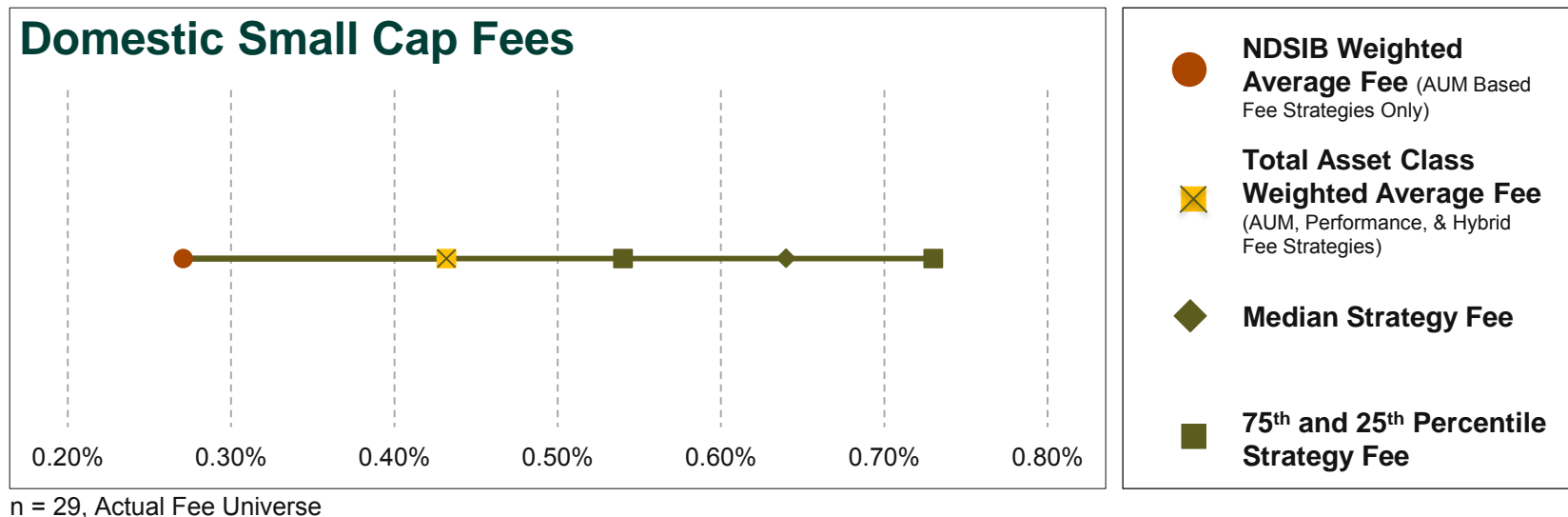
Legacy Fund

Domestic Large Cap Equity	
AUM Based Fee Strategies	Fee %
L.A. Capital Growth	0.21%
LSV Asset Management	0.29%
Weighted Average AUM Based Fee	0.25%
Industry Fee - 25 th Percentile	0.35%
Industry Fee - Median	0.25%
Industry Fee - 75 th Percentile	0.20%
Performance & Hybrid Fee Strategies	Fee %
L.A. Capital Enhanced Index	0.33%
Parametric Clifton Enhanced S&P 500	0.26%
Total Weighted Average Fee	0.27%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
 - 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 return is charged on approximately 40% of the assets.
 - Parametric Clifton Enhanced Index charges no base management fee. The manager is paid 35% of any excess return above the benchmark. Fees are paid annually for performance through June 30.

Domestic Small Cap Equity

Legacy Fund



- Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S.
- North Dakota's average account size for FY 2016: \$117mm.
- Red circle represents NDSIB Legacy Fund's asset based weighted average domestic small cap equity mgmt. fee: 0.27%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.43%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Domestic Small Cap Equity

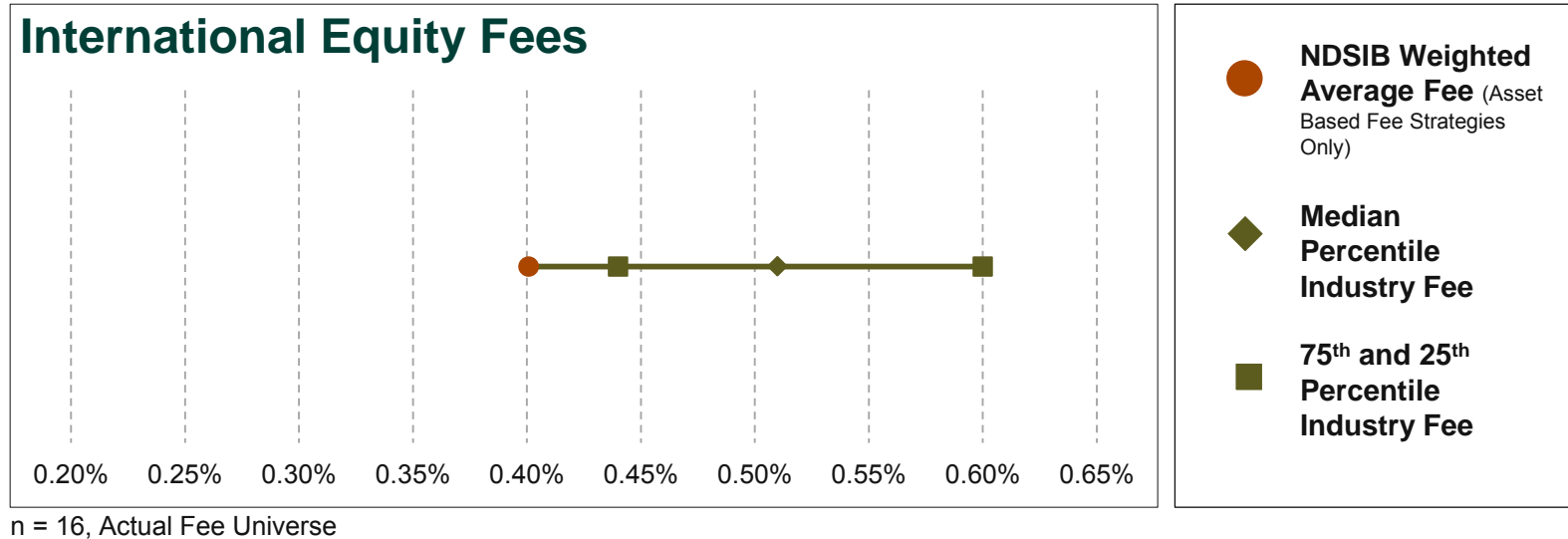
Legacy Fund

Domestic Small Cap Equity	
AUM Based Fee Strategies	Fee %
PIMCO (Research Affiliates)	0.27%
Weighted Average AUM Based Fee	0.27%
Industry Fee - 25 th Percentile	0.73%
Industry Fee - Median	0.64%
Industry Fee - 75 th Percentile	0.54%
Performance & Hybrid Fee Strategies	Fee %
Parametric Clifton Enhanced Index	0.55%
Total Weighted Average Fee	0.43%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 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.

Developed International Equity

Legacy Fund



- 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 account size for FY 2016: \$176mm.
- Red circle represents NDSIB Legacy Fund's asset based weighted average developed international equity mgmt. fee: 0.40%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes between \$100mm and \$200mm.

Investment Strategies – Developed International Equity

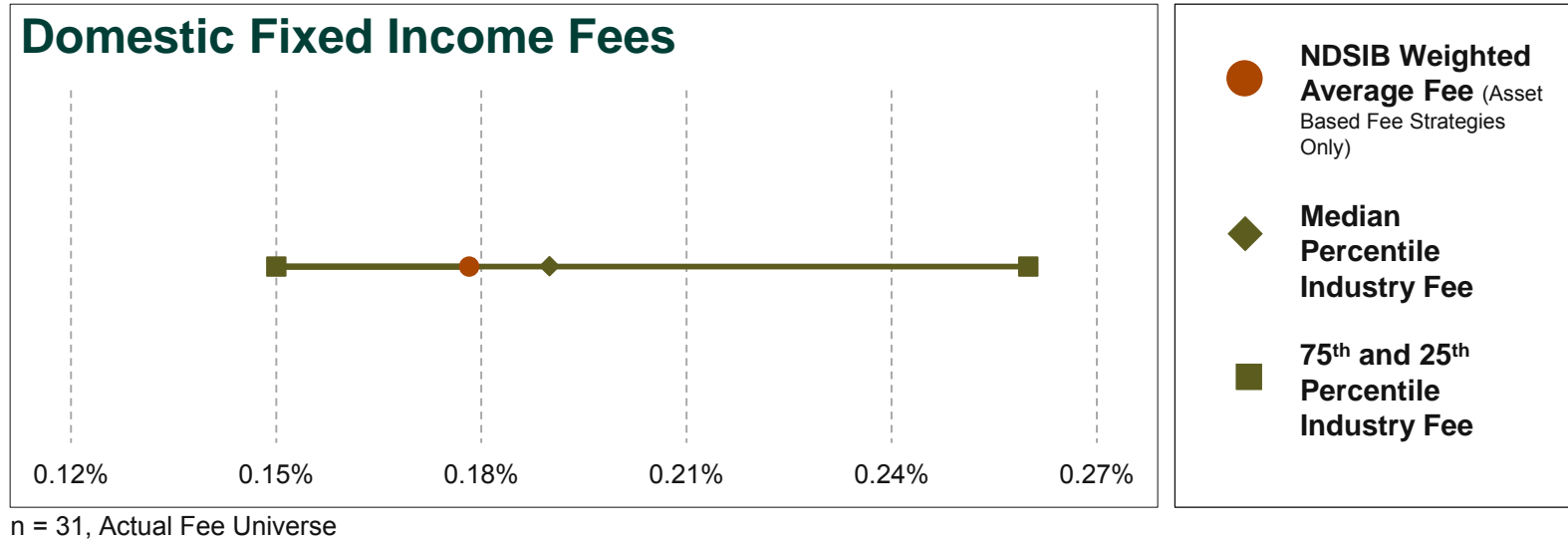
Legacy Fund

International Equity	
AUM Based Fee Strategies	Fee %
Capital Guardian	0.45%
DFA Int'l Small Cap	0.65%
LSV Asset Management	0.38%
Vanguard Int'l Explorer Fund	0.35%
William Blair	0.04%
Weighted Average AUM Based Fee	0.40%
Industry Fee - 25 th Percentile	0.60%
Industry Fee - Median	0.51%
Industry Fee - 75 th Percentile	0.44%
Total Weighted Average Fee	0.40%

- All managers for this asset class fall into the asset based fee category.
- Note that Capital Guardian Trust was terminated in May 2016 and the proceeds were used to fund William Blair in June 2016.

Domestic Fixed Income

Legacy Fund



- Domestic Fixed Income managers invest in bonds and other debt instruments.
- North Dakota's average account size for FY 2016: \$240mm.
- Red circle represents NDSIB Legacy Fund's asset based weighted average domestic fixed income mgmt. fee: 0.18%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes greater than \$200mm.

Investment Strategies – Domestic Fixed Income

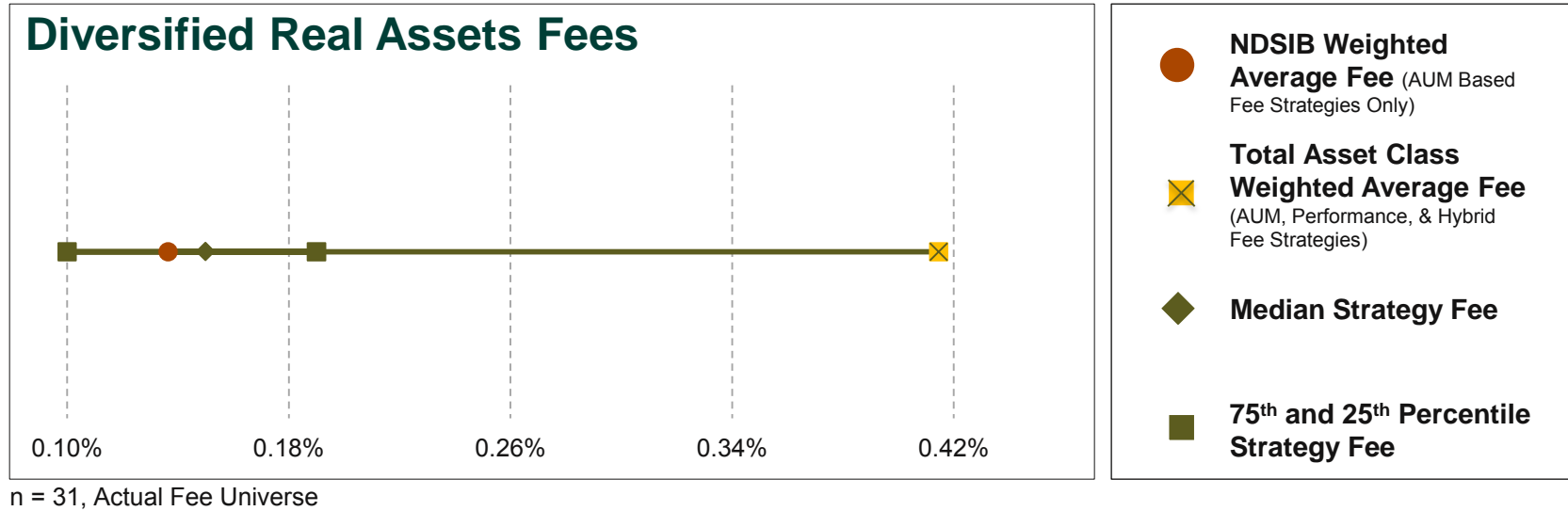
Legacy Fund

Domestic Fixed Income	
AUM Based Fee Strategies	Fee %
Declaration of Total Return	0.45%
Prudential	0.27%
SSgA U.S. Govt Credit Bond Index	0.03%
Wells Capital	0.18%
Western Asset Management	0.14%
Weighted Average AUM Based Fee	0.18%
Industry Fee - 25 th Percentile	0.26%
Industry Fee - Median	0.19%
Industry Fee - 75 th Percentile	0.15%
Total Weighted Average Fee	0.18%

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

Diversified Real Assets

Legacy Fund



- Diversified Real Assets managers invest in assets that are expected to perform well during periods of inflation.
- North Dakota's average account size: \$263mm.
- Red circle represents NDSIB Legacy Fund's asset based weighted average Diversified Real Assets mgmt. fee: 0.14%.
- Yellow box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2016: 0.41%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using Callan's 2014 Investment Management Fee Survey for mandate sizes greater than \$200mm.

Investment Strategies – Diversified Real Assets

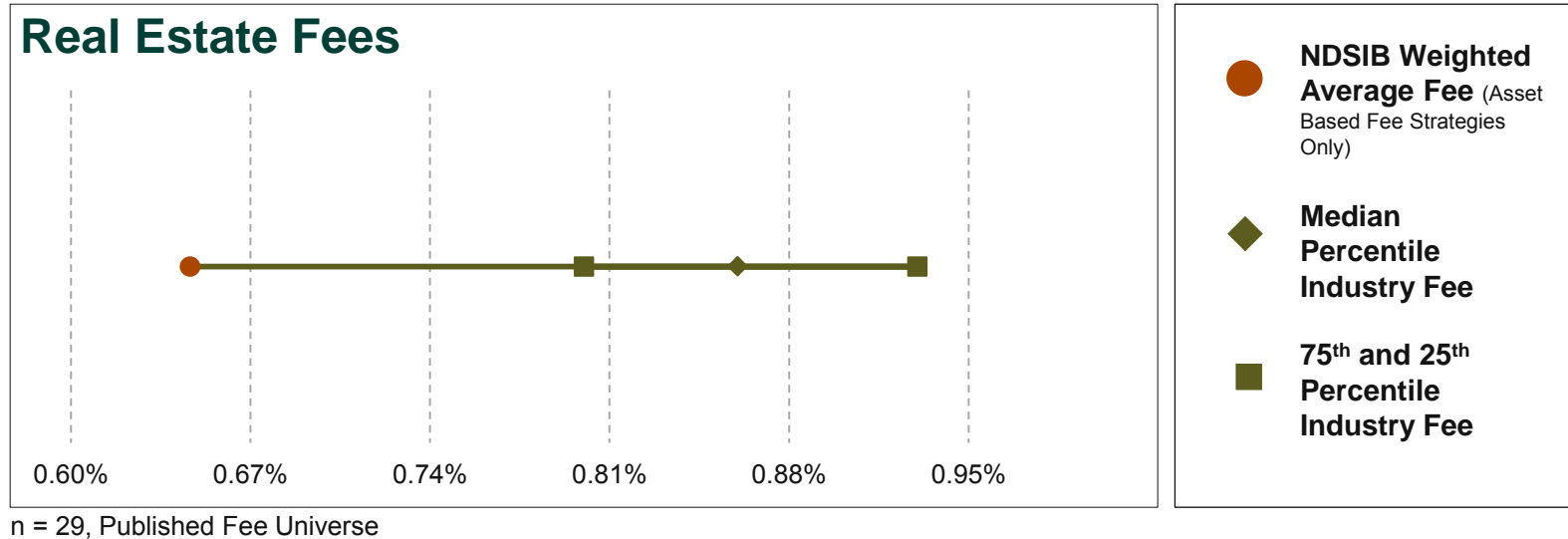
Legacy Fund

Inflation Protected	
AUM Based Fee Strategies	Fee %
Western Asset Management	0.14%
Weighted Average AUM Based Fee	0.14%
Industry Fee - 25 th Percentile	0.19%
Industry Fee - Median	0.15%
Industry Fee - 75 th Percentile	0.10%
Performance & Hybrid Fee Strategies	Fee %
JP Morgan Infrastructure	0.90%
Grosvenor Infrastructure Fund II	2.96%
Total Weighted Average Fee	0.41%

- Due to the fee structure of the funds in the Performance & Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2014 Investment Management Fee Survey.
- The infrastructure universe is too small to make an appropriate comparison of fees.
 - 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 II charges a base management fee on assets and charges a performance fee for performance exceeding a “preferred” return set by the fund.

Real Estate

Legacy Fund



- 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 account size: \$104mm.
- Red circle represents NDSIB Legacy Fund's asset based weighted average real estate mgmt. fee: 0.65%.
- Green boxes and diamond represent the 75th, Median, and 25th fee percentiles for the fee universe.
- Fee universe was constructed using published fee schedules from Callan's Real Estate Manager Peer Group, using a mandate size between \$100mm and \$200mm.

Investment Strategies – Real Estate

Legacy Fund

Real Estate	
AUM Based Fee Strategies	Fee %
Invesco Core Real Estate	0.34%
JP Morgan Real Estate	0.97%
Weighted Average AUM Based Fee	0.65%
Industry Fee - 25 th Percentile	0.93%
Industry Fee - Median	0.86%
Industry Fee - 75 th Percentile	0.80%
Total Weighted Average Fee	0.65%

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

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, 2016.
- 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 2016. In some cases, an account's value changed significantly during the fiscal year due to external capital flows. In those cases, reasonable adjustments were made to reflect the effect and timing of these cash flows.
- 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;
 - **AUM 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 & 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.