

# Pioneer Municipal High Income Advantage Trust

February 28, 2010

**Pioneer Municipal High Income Advantage Trust is a closed-end trust designed to pursue high current income exempt from regular federal income tax, with capital appreciation as a secondary objective. The Trust invests in a professionally managed portfolio of municipal securities from across the United States.**

Up to 25% of the Trust's total assets may be invested in municipal securities the interest income on which is a preference item for purposes of the alternative minimum tax. Distributions from sources other than interest income from securities including capital gain distributions, are not exempt from regular federal income tax. Income from the Trust will not be exempt from state and local taxes. A portion of income may be subject to state, federal, and/or alternative minimum tax. Capital gains, if any, are subject to a capital gains tax. Investments in high yield or lower-rated securities are subject to greater-than-average risk. If the Internal Revenue Service determines an issuer of a municipal security has not complied with applicable tax requirements, interest from the security could become taxable and the security could decline significantly in value. Investments in the fund are subject to possible loss due to the financial failure of underlying securities and their inability to meet their debt obligations. When interest rates rise, the prices of fixed-income securities in the fund will generally fall. Conversely, when interest rates fall the prices of fixed-income securities in the fund will generally rise. These risks may increase share price volatility.

## FUND FACTS

CUSIP	723762100
Symbol	MAV
Total Common Assets (millions)	\$280.1
Total Preferred Assets (millions)	\$150.0
Leverage %	34.9%
Total Net Assets (millions)	\$430.1
Net Asset Value	\$12.19
Market Price	\$12.75
Premium/Discount	4.6%
Alternative Minimum Tax	20.03%
Inception Date	10/17/03
Total Expense Ratio (Common)	1.47%
Number of Issues	150

## 12-MONTH DIVIDEND HISTORY

Ex Date	Payable Date	Dividend Per Share
3/12/09	3/31/09	0.075
4/13/09	4/30/09	0.075
5/13/09	5/29/09	0.075
6/11/09	6/30/09	0.075
7/13/09	7/31/09	0.075
8/12/09	8/31/09	0.075
9/11/09	9/30/09	0.080
10/13/09	10/30/09	0.080
11/12/09	11/30/09	0.085
12/9/09	12/18/09	0.085
1/14/10	1/29/10	0.085
2/10/10	2/26/10	0.085

Dividends are not guaranteed.

## TOP 5 SECTORS

1. Health	27.4%
2. Various Revenues	18.5%
3. Transportation	12.7%
4. Special Revenues	10.0%
5. Insured	9.4%

## PORTFOLIO CHARACTERISTICS

Average Credit Quality	A-
Average Life	13.86 Years
Duration	10.09 Years
Current Dividend Yield (on market price)	8.00%
Taxable-Equivalent Yield (on market price)	12.31%

Average Credit Quality is an asset weighted average of the higher rating of the fixed income securities, cash, and cash equivalents in the Fund as provided by Moody's or S&P. The rating also includes securities that have not been rated by either of the rating agencies, which has the effect of reducing the overall average. Source: Wilshire Axiom. Current Yield is calculated by dividing the last distribution per share (annualized) by market price. **The performance data quoted represents past performance, which is no guarantee of future results.**

## TOP 10 HOLDINGS

1. Blackrock Liquidity Funds MuniFund Portfolio	3.72%
2. New Jersey Economic Development Authority	2.66%
3. University of California VAR, 5/15/38	2.46%
4. Mass State Housing Fin Agency 5.35%, 12/1/45	2.40%
5. Indiana St Dev Fin, 5.75%, 10/1/11	2.38%
6. Non-Profit PFD FDG TR I VAR ST FRN, 9/15/37	2.34%
7. North Tex Twy Auth North Twy 5.75% 1/1/33	2.32%
8. Houston TX Airport REV, 6.75%, 7/1/29	2.19%
9. Tobacco Settlement Financing Corporation Revenue, 5.875%	2.02%
10. South Carolina Jobs Economic Authority Hospital	1.94%

The portfolio is actively managed, and current holdings may be different. The holdings listed should not be considered recommendations to buy or sell any security listed.

Not FDIC insured

May lose value

No bank guarantee



## PORTFOLIO ALLOCATIONS

Municipal Bonds	99.4%
Cash & Equivalents	0.6%

## QUALITY DISTRIBUTION

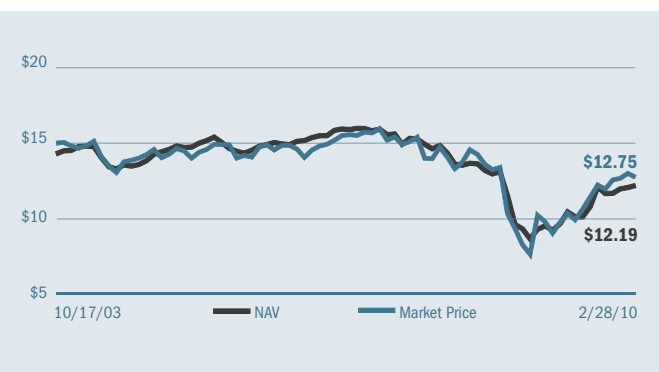
AAA	20.5%
AA	5.5%
A	9.8%
BBB	25.1%
BB & Lower	38.5%
Cash Equivalents	0.6%

Credit Quality is based on ratings provided by Standard and Poor's and Moody's. The portfolio is actively managed, and current characteristics may be different.

## MATURITY DISTRIBUTION

0 to 2 Years	8.68%
2 to 5 Years	20.79%
5 to 7 Years	3.65%
7 to 10 Years	9.01%
10 to 20 Years	24.29%
20 + Years	33.58%

## NET ASSET VALUE AND MARKET PRICE HISTORY



## AVERAGE ANNUAL TOTAL RETURNS

	Market Price	Net Asset Value
Through February 28, 2010		
Since Inception (10/17/03)	4.76%	4.78%
1- Year	41.97%	39.58%
3- Year	1.05%	-1.62%
5- Year	4.18%	3.18%

## NEXT CALL DATE as of 2/28/10

Under 5 Years	57.7%
5 Years - 9.99 Years	23.3%
10 Years and over	0.0%
Non-callable	19.0%

## Pioneer Municipal High Income Advantage Trust Offers Investors:

- High Current Income – The Trust seeks opportunities for a high level of current income exempt from federal income tax by investing in municipal securities with a broad range of maturities and credit ratings. The Trust intends to pay dividends on a monthly basis.
- Top management team – The Trust is managed by one of the industry's most experienced fixed-income management teams who are part of an integrated global team of fixed-income and equity portfolio managers.

## Portfolio Management

Day-to-day management of the Trust's portfolio is the responsibility of David J. Eurkus. Mr. Eurkus, a municipal bond manager, has more than 38 years of investment experience and is assisted on the portfolio by Timothy M. Pynchon. Mr. Pynchon, a municipal bond manager, has been an investment professional for over 25 years. The team will draw on the judgment of the full U.S. staff, as well as the research of Pioneer's affiliate, Pioneer Investment Management Limited, based in Dublin, Ireland.

Call 1-800-225-6292 or visit [pioneerinvestments.com](http://pioneerinvestments.com) for the most recent month-end performance results. Current performance may be lower or higher than the performance data quoted.

**Performance data shown represents past performance. Past performance is no guarantee of future results.** Investment return and market price will fluctuate, and your shares may trade below net asset value, due to such factors as interest rate changes, and the perceived credit quality of borrowers.

Total investment return does not reflect broker sales charges or commissions. All performance information is for common shares of the Trust.

Performance results reflect any applicable expense waivers in effect during the periods shown. Without such waivers, fund performance would be lower. Waivers may not be in effect for all funds. Certain fee waivers are contractual through a specified period. Otherwise, fee waivers can be rescinded at any time. See the prospectus and financial statements for more information.

**Closed-end funds, unlike open-end funds, are not continuously offered. Once issued, shares of closed-end funds are sold in the open market through a stock exchange and frequently trade at prices lower than their net asset value. Net Asset Value (NAV) is total assets less total liabilities, which includes preferred shares, divided by the number of common shares outstanding. When net asset value (NAV) is lower than market price, dividends are assumed to be reinvested at the greater of NAV or 95% of the market price. When NAV is higher, dividends are assumed to be reinvested at market price.**

**For additional information, please contact your investment adviser or visit our website [pioneerinvestments.com](http://pioneerinvestments.com).**