PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM N-CSR

CERTIFIED SHAREHOLDER REPORT OF REGISTERED MANAGEMENT INVESTMENT COMPANIES

Investment Company Act file number 811-21409

Pioneer Municipal High Income Advantage Trust (Exact name of registrant as specified in charter)

60 State Street, Boston, MA 02109 (Address of principal executive offices) (ZIP code)

Dorothy E. Bourassa, Pioneer Investment Management, Inc., 60 State Street, Boston, MA 02109 (Name and address of agent for service)

Registrant's telephone number, including area code: (617) 742-7825

Date of fiscal year end: March 31

Date of reporting period: April 1, 2006 through March 31, 2007

Form N-CSR is to be used by management investment companies to file reports with the Commission not later than 10 days after the transmission to stockholders of any report that is required to be transmitted to stockholders under Rule 30e-1 under the Investment Company Act of 1940 (17 CFR 270.30e-1). The Commission may use the information provided on Form N-CSR in its regulatory, disclosure review, inspection, and policymaking roles.

A registrant is required to disclose the information specified by Form N-CSR, and the Commission will make this information public. A registrant is not required to respond to the collection of information contained in Form N-CSR unless the Form displays a currently valid Office of Management and Budget ("OMB") control number. Please direct comments concerning the accuracy of the information collection burden estimate and any suggestions for reducing the burden to Secretary, Securities and Exchange Commission, 450 Fifth Street, NW, Washington, DC 20549-0609. The OMB has reviewed this collection of information under the clearance requirements of 44 U.S.C. ss. 3507.

ITEM 1. REPORTS TO SHAREOWNERS.

PIONEER

MUNICIPAL HIGH INCOME ADVANTAGE TRUST

> Annual Report

3/31/07

[LOGO] PIONEER
Investments(R)

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President's

Dear Shareowner,

Staying diversified and keeping your portfolio invested in the markets are two general investment principles that have served investors well over time. These were particularly useful guides during the past year, as U.S. and global stock and bond markets grew strongly during this period.

The markets were supported by relatively low short-term interest rates and generally strong economies around the globe. The U.S. stock market, as measured by the Standard & Poor's 500 Index, gained approximately 10% over the 12 months ending March 31, 2007. European and emerging markets equities performed even better, with indexes in those regions rising more than 20% over the same period. The U.S. bond market, despite growing concerns about the health of the U.S.

mortgage industry, gained roughly 7% over the past 12 months, as measured by the Lehman Aggregate Bond Index. The high yield market, as measured by the Merrill Lynch High Yield Bond Master II Index, returned nearly 12%.

We believe that the climate for investors generally will continue to be positive. While still strong, the U.S. economy has slowed. This was due in part to the lagging effects of rising energy and commodity prices, rising short-term interest rates from historically low levels, and the effect of U.S. factories approaching full utilization.

We have enjoyed a cyclical recovery with strong economic growth, and the U.S. economy now appears to be slowing to a rate that may be more sustainable. The Federal Reserve Board has indicated a reduced likelihood of future rate hikes, and continues to highlight its commitment to keeping inflationary pressures contained. This is in keeping with "best practices" among the world's central banks: low and stable inflation is believed to be the best backdrop for stable economic growth and low average unemployment.

In Europe, healthy labor markets are supporting growing consumption and rising GDP growth. Inflationary pressures appear to be largely under control, helped by productivity gains and a positive operating environment for European companies that are finding strong export markets for their goods and services around the globe. Japanese economic growth continues to make progress, and the country has

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Letter

become a more attractive market compared to recent years. China continues its rise as a world economic power, and its stock market has experienced the wide market swings that often accompany rapid growth.

While the outlook generally appears favorable for investors, sudden swings in the markets should be expected. Just as staying diversified and staying invested are important investment principles, it is also important to pay attention to asset allocation. As always, we encourage shareowners to work closely with their financial advisor to find the appropriate mix of investments in stocks, bonds and money market assets so that it is aligned to your particular risk tolerance and investment objective.

Respectfully,

/s/ Daniel K. Kingsbury

Daniel K. Kingsbury, President and CEO Pioneer Investment Management USA Inc.

Any information in this shareowner report regarding market or economic trends or the factors influencing the Trust's historical or future performance are statements of the opinion of Trust management as of the date of this report. These statements should not be relied upon for any other purposes. Past performance is no guarantee of future results, and there is no guarantee that market forecasts discussed will be realized.

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Pioneer Municipal High Income Advantage Trust

PORTFOLIO MANAGEMENT DISCUSSION 3/31/07

Throughout the Trust's fiscal year, investors in Pioneer Municipal High Income Advantage Trust benefited from a well-diversified portfolio of securities that provided a relatively high level of tax-free income. In the following interview, David Eurkus, who is responsible for daily management of the Trust, discusses some of the factors that had an impact on the municipal bond market and the Trust.

- Q: How did the Trust perform over the past 12 months?
- A: For the 12-month period ended March 31, 2007, Pioneer Municipal High Income Advantage Trust produced a total return of 11.96% at net asset value and 10.21% at market price. As of March 31, 2007, the Trust was selling at a discount of market price to net asset value of 1.9%. The Lehman Brothers Municipal Bond Index returned 5.43%, while the Lehman Brothers Non-Investment Grade Municipal Bond Index returned 9.84% for the same period. At the end of the 12 months, the Trust held 144 issues in 35 states, territories and the District of Columbia. On March 31, 2007, the Trust's 30-day SEC yield was 7.52%. When reviewing the Trust's relative performance, it is important to note that the Lehman Brothers Municipal Bond Index tracks the performance only of investment-grade bonds and does not include below investment-grade bonds, which are a significant part of the portfolio. At the end of the 12 months, about 45% of the Trust's total investments were in investment-grade bonds with the remaining in below investment-grade bonds.

Call 1-800-225-6292 or visit www.pioneerinvestments.com for the most recent month-end performance results. Current performance may be lower or higher than the performance data quoted. The performance data quoted represents past performance, which is no guarantee of future results. Investment return and principal value will fluctuate, and shares, when redeemed, may be worth more or less than their original costs.

- Q: What was the investment environment like during the year?
- A: The investment backdrop changed substantially during the fiscal year. At the beginning of the period, interest rates were on an upward trajectory in the face of relatively strong economic growth. As a result, the Federal Reserve continued to boost the Federal funds rate, the rate banks charge for overnight loans. In the second half of the period, economic growth moderated; and

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Pioneer Municipal High Income Advantage Trust

for several months the central bank left the Federal funds rate unchanged at 5.25%, and market rates declined. Throughout the 12 months, investors gravitated toward the riskiest investments, boosting the prices of lower-quality, higher-yielding bonds. For the entire fiscal period, these lower-quality assets led the fixed-income market.

Q: What strategies did you use in managing the Trust?

A: In keeping with our buy-and-hold strategy, we made relatively few changes to the Trust, maintaining a mix of 31.3% of total investments in investment-grade bonds, 68.1% of total investments in below investment-grade bonds, and 0.6% of total investments in cash equivalents. At the end of the fiscal period, the Trust's average quality was BBB-. We kept the Trust invested in sectors that comprise the economic fabric of the United States, including transportation, education, healthcare, and public power, among others. In addition, we had a position in tobacco bonds, which are backed by tobacco companies' payments to states. We also created a position in bonds issued by correctional institutions that have been privatized by the federal government and are now being built and managed by private corporations.

On March 31, 2007, 29% of the Trust was leveraged, which means that in the past we borrowed funds at relatively low rates and invested those funds in high-yielding bonds. This leveraging strategy has aided return for several years. Should rates decline, the cost of borrowing would also go down, providing the Trust with a modest amount of additional income. A rise in short-term interest rates in the future would add to the Trust's borrowing costs, and the ability to sustain present dividend levels could be affected.

- Q: What contributed to performance?
- A: Nearly all of the portfolio's positions contributed to results, but the biggest gains came from transportation and education bonds. In addition, the Trust's higher-yielding, below investment-grade bonds outperformed the investment-grade bonds in the portfolio.

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Pioneer Municipal High Income Advantage Trust

PORTFOLIO MANAGEMENT DISCUSSION 3/31/07 (continued)

- Q: What detracted from performance?
- A: Our holdings in the housing sector, which accounted for 2.1% of total investments, underperformed because of weakness in the real estate industry in general and concerns about the rise in sub-prime mortgage defaults in particular. Because of the relatively strong economy, many issuers have a surplus of cash which they are using to pay down their bond debt earlier than expected. As some of our bonds have been called, or redeemed, before their maturity dates, we have invested the proceeds in new securities that have lower yields than the redeemed bonds. Having bonds called sooner than expected is a normal part of the fixed-income process, and we continue to find attractive investment opportunities.
- Q: What is your outlook over the next six months?
- A: The environment continues to be attractive for municipal bonds, as economic growth moderates and interest rates and inflation remain at relatively low levels. While new bond issuance has declined, demand for high-yield securities remains robust as new types of investors, such as hedge funds and property and casualty insurers, seek the tax-advantaged yields that municipal bonds can provide. This supply/demand dynamic is positive for the Trust because it has the potential of increasing the value of the bonds in

the portfolio. As we look ahead, we plan to maintain our investment approach of keeping the Trust fully invested in sectors that are vital to the U.S. economy.

Investments in high-yield or lower-rated securities are subject to greater-than-average risk. The Trust may invest in securities of issuers that are in default or that are in bankruptcy.

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. When interest rates rise, the prices of fixed-income securities in the Trust will generally fall. Conversely, when interest rates fall, the prices of fixed-income securities in the Trust will generally rise. By concentrating in municipal securities, the portfolio is more susceptible to adverse economic, political or regulatory developments than is a portfolio that invests more broadly. Investments in the Trust are subject to possible loss due to the

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Pioneer Municipal High Income Advantage Trust

financial failure of underlying securities and their inability to meet their debt obligations.

The Trust may use leverage through the issuance of preferred shares with an aggregate liquidation preference of up to 331/3% of the Trust's total assets after such issuance. Leverage creates significant risks, including the risk that the Trust's income or capital appreciation will not be sufficient to cover the cost of leverage, which may adversely affect the return for the holders of common shares.

Risks of investing in the Trust are discussed in greater detail in the Trust's registration statement on Form N-2 relating to its common shares.

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Pioneer Municipal High Income Advantage Trust

PORTFOLIO SUMMARY 3/31/07

Portfolio Diversification

(As a percentage of total investment portfolio)

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[The following data was represented as a pie chart in the printed material]

Health Revenue	25.1%
Insured	13.1%
Development Revenue	11.6%
Airport Revenue	11.4%
Tobacco Revenue	9.6%
Transportation Revenue	6.1%
Facilities Revenue	6.0%
Pollution Control Revenue	5.7%
General Obligation	4.6%
Other Revenue	2.1%
Housing Revenue	1.8%
Education Revenue	1.5%
Water Revenue	1.1%
Power Revenue	0.3%

Portfolio Maturity

(As a percentage of long-term holdings)

[The following data was represented as a pie chart in the printed material]

0-1 years	11.1%
1-3 years	13.2%
3-6 years	41.2%
6-8 years	15.6%
8-10 years	3.6%
10+ years	15.3%

Quality Distribution

(As a percentage of total investment portfolio; based on S&P ratings)

[The following data was represented as a pie chart in the printed material]

AAA	10.2%
AA	0.4%
A	2.7%
BBB	18.0%
BB	8.9%
В	13.9%
CCC	1.2%
Not Rated	44.1%
Cash Equivalents	0.6%

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Pioneer Municipal High Income Advantage Trust

PRICES AND DISTRIBUTIONS 3/31/07 ______ Share Prices and Distributions ______ Market Value per Common Share 3/31/07 3/31/06 \$15.61 \$14.99 Net Asset Value per Common Share 3/31/07 3/31/06 \$15.91 \$15.04 Net Investment Short-Term Long-Term
Income Capital Gains Capital Gains Distributions per Common Share (4/1/06 - 3/31/07) \$0.86 \$ -\$ -10 Largest Holdings ______ (As a percentage of long-term holdings) * 1. New Jersey Economic Development Authority Revenue, 6.25%, 9/15/29 2.75% 2. Non-Profit Preferred Funding Trust I, Series E, 8.0%, 9/15/37 (144A) 2.66 3. Charlotte North Carolina Special Facilities Revenue, 5.6%, 7/1/27 2.34 4. University of California, RIB, 6.275%, 5/15/38 (144A) 2.31 5. Houston Texas Airport System Revenue, 6.75%, 7/1/29 2.19 6. Miami-Dade County Aviation Revenue, 5.0%, 10/1/37 2.14 7. Indiana State Development Finance Authority Revenue, 5.75%, 10/1/11 2.13 8. Tobacco Settlement Financing Corp., 5.875%, 5/15/39 2.06

9. Brazos River Authority Pollution Control Revenue,

10. Valley Health System Hospital Revenue, 6.875%, 5/15/23

6.75%, 10/1/38

1.94

1.91

^{*} This list excludes temporary cash and derivative investments. The portfolio is actively managed, and current holdings may be different.

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Pioneer Municipal High Income Advantage Trust

PERFORMANCE UPDATE 3/31/07

Investment Returns

The mountain chart on the right shows the change in market value, including reinvestment of dividends and distributions, of a \$10,000 investment made in common shares of Pioneer Municipal High Income Advantage Trust, compared to that of the Lehman Brothers Municipal Bond Index and Lehman Brothers Non-Investment Grade Municipal Bond Index.

Cumulative Total Returns
(As of March 31 2007)

Period (NAV) Price	(AS OI MARCH 31, 2007)	Net Asset Value	Market	
	Period			
Life-of-Trust	Life-of-Trust			
(10/20/03) 40.50% 31.69%	(10/20/03)	40.50%	31.69%	
1 Year 11.96 10.21	1 Year	11.96	10.21	

[The following data was represented as a line graph in the printed material]

Value of \$10,000 Investment

	Pioneer Municipal High Income Advantage Trust	Lehman Brothers Municipal Bond Index	Lehman Brothers Non-Investment Grade Municipal Bond Index
10/03	\$10,000	\$10,000	\$10,000
3/04	\$10,293	\$10,364	\$10,565
3/05	\$10,712	\$10,641	\$11,536
3/06	\$11,949	\$11,046	\$12,588
3/07	\$13,169	\$11,645	\$13,827

Call 1-800-225-6292 or visit www.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 ("NAV"), 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 is for common shares of the Trust.

Closed-end funds, unlike open-end funds, are not continuously offered. There is a one-time public offering and, 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 NAV. NAV is total assets less total liabilities which includes preferred shares divided by the number of common shares outstanding.

When 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 prices obtained under the Trust's dividend reinvestment plan.

The performance table and graph do not reflect the deduction of fees and taxes that a shareowner would pay on Trust distributions or the redemption of Trust shares.

Index comparison begins October 31, 2003. The Lehman Brothers Municipal Bond Index is a broad measure of the municipal bond market. Lehman Brothers Non-Investment Grade Municipal Bond Index totals over \$26 billion in market value and maintains over 1300 securities. Municipal bonds in this index have the following requirements: maturities of one year or greater, sub investment grade (below Baa or non-rated), fixed coupon rate, issue date later than 12/31/90, deal size over \$20 million, maturity size of at least \$3 million. Index returns are calculated monthly, assume reinvestment of dividends and, unlike Trust returns, do not reflect any fees, expenses or sales charges. You cannot invest directly in the Indices.

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Pioneer Municipal High Income Advantage Trust

SCHEDULE OF INVESTMENTS 3/31/07

Principal Amount	S&P/ Moody's Ratings (unaudited)	
\$ 3,875,000(a)	NR/Aaa	TAX-EXEMPT OBLIGATIONS - 131.4% of Net Assets Alaska - 1.2% Alaska State Housing Finance Corp., RIB, 9.315%, 6/1/49 (144A)
		Arizona - 4.1%
5,000,000	NR/NR	Casa Grande Industrial Development Authority Hospital Revenue, 7.625%, 12/1/29
3,000,000(a)	NR/Aaa	Downtown Phoenix Hotel Corp., RIB, 6.103%, 7/1/40 (144A)
1,000,000	NR/Baa3	Pima County Industrial Development Authority, 6.3%, 7/1/31 (144A)
1,560,000	NR/Baa3	Pima County Industrial Development Authority, 6.75%, 7/1/31
1,000,000+	NR/NR	Pima County Industrial Development Authority, 7.5%, 7/1/34
2,000,000	NR/NR	San Luis Facility Development Corp.,

Val

\$ 4,374,8

\$ 5,535,3

3,414,8

1,076,2

1,673,7

1,206,4

			7.25%, 5/1/27	2,038,
				\$ 14,945,
			California - 6.6%	
2,68	80,000+	AAA/Aaa	Golden State Tobacco Securitization Corp., 6.75%, 6/1/39	\$ 3,122,
9,52	0,000(a)	NR/Aaa	University of California, RIB,	
0 00			6.275%, 5/15/38 (144A)	11,277,
9,32	10,000	B+/NR	Valley Health System Hospital Revenue, 6.875%, 5/15/23	9,334,
				\$ 23,734,
			Colorado - 1.9%	
2 , 85	0,000	BBB/Baa3	Denver Health & Hospital Authority Healthcare Revenue, 6.0%, 12/1/31	\$ 3,031,
3 , 52	0,000	CCC/B3	Northwest Parkway Public Highway Authority, 7.125%, 6/15/41	3,785,
				\$ 6,816,
			District of Columbia - 2.1%	
2,70	0,000	BBB/Baa3	District of Columbia Tobacco Settlement Financing Corp., 6.5%, 5/15/33	\$ 3,216,
4.00	0,000	BBB/Baa3	District of Columbia Tobacco Settlement Financing	y 3,210,
1,00	-,		Corp., 6.75%, 5/15/40	4,398,
				\$ 7,615,

The accompanying notes are an integral part of these financial statements. 11

Pioneer Municipal High Income Advantage Trust

SCHEDULE OF INVESTMENTS 3/31/07 (continued)

Principal Amount	S&P/ Moody's Ratings (unaudited)			Val
		Florida - 5.6%		
\$ 1,000,000	NR/NR	Greater Orlando Aviation Authority, 6.5%, 11/15/36	Ś	1,067,0
4,500,000	BBB-/Baa2	Hillsborough County Florida Industrial Development Authority Pollution Control Revenue, 5.5%, 10/1/23	٧	4,757,5
1,980,000	NR/NR	Hillsborough County Florida Industrial Development Authority Pollution Control Revenue,		0 007 0
500,000	BB+/NR	6.75%, 7/1/29 Miami Beach Health Facilities Authority,		2,027,6
,	,	5.375%, 11/15/28		507,1
1,500,000	BB+/Ba1	Miami Beach Health Facilities Authority, 6.7%, 11/15/19		1,639,0
10,000,000	AAA/Aaa	Miami-Dade County Aviation Revenue,		, , .

2,038,9

		5.0%, 10/1/37	10,438,3
			\$ 20 , 436 , 8
		Georgia - 2.1%	
4,000,000(a)	NR/Aaa	Atlanta Georgia Water and Wastewater Revenue, RIB, 6.193%, 11/1/43 (144A)	\$ 4,562,6
1,065,000	NR/B2	Effingham County Industrial Development Authority, 6.5%, 6/1/31	1,129,3
1,650,000	NR/NR	Savannah Georgia Economic Development	1,123,0
		Authority Revenue, 7.4%, 1/1/34	1,803,7
			\$ 7 , 495 , 7
		Guam - 1.5%	
5,000,000	B+/Ba3	Northern Mariana Islands, 6.75%, 10/1/33	\$ 5,589,3
		Idaho - 2.3%	
2,000,000	BBB-/Baa3	Power County Industrial Development Corp., 6.45%, 8/1/32	\$ 2,121,9
5,920,000	BBB-/Baa3	Power County Pollution Control Revenue,	6 071 4
		5.625%, 10/1/14	 6,071,4
			\$ 8,193,4
		Illinois - 6.1%	
4,000,000	NR/NR	Centerpoint Intermodal Center, 8.0%, 6/15/23 (144A)	\$ 4,134,4
1,000,000	NR/NR	Illinois Finance Authority Revenue,	
1,100,000	NR/NR	5.1%, 8/15/31 Illinois Finance Authority Revenue,	1,018,4
1,100,000	TAT/\ TAT/	5.5%, 5/15/26	1,127,3

12 The accompanying notes are an integral part of these financial statements.

Pioneer Municipal High Income Advantage Trust

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Principal Amount	S&P/ Moody's Ratings (unaudited)		Val
		Illinois - (continued)	
\$ 1,850,000	NR/NR	Illinois Finance Authority Revenue,	
		5.75%, 5/15/38	\$ 1,926,9
1,000,000	NR/NR	Illinois Finance Authority Revenue,	
		6.0%, 11/15/27	1,056,0
3,000,000	NR/NR	Illinois Finance Authority Revenue,	
		6.0%, 11/15/39	3,140,4
1,645,000	NR/NR	Illinois Health Facilities Authority Revenue,	
		5.5%, 11/15/19	1,652,0
1,265,000	NR/B2	Illinois Health Facilities Authority Revenue,	
		6.7%, 3/1/14	1,265,3
2,400,000	NR/B2	Illinois Health Facilities Authority Revenue,	

1,500,000	NR/NR NR/NR	6.75%, 3/1/24 Illinois Health Facilities Authority Revenue, 6.9%, 11/15/33 Southwestern Illinois Development Authority Revenue, 5.625%, 11/1/26
		Indiana - 4.9%
10,000,000	BBB/Ba1	Indiana State Development Finance Authority Revenue, 5.75%, 10/1/11
5,000,000	NR/B2	Jasper County Industrial Economic Development Revenue, 5.6%, 4/1/29
2,245,000	NR/NR	Vincennes Industrial Economic Development Revenue, 6.25%, 1/1/24
		Kentucky - 1.4%
500,000	BB-/NR	Kentucky 1.4° Kentucky Economic Development Finance Authority Hospital System Revenue, 5.7%, 10/1/10
4,400,000	BB-/NR	Kentucky Economic Development Finance Authority Hospital System Revenue, 5.875%, 10/1/22
750 , 000	BBB+/NR	Louisiana - 3.0% Opelousas Louisiana General Hospital Authority
		Revenue, 5.75%, 10/1/23
9,415,000	BBB/Baa3	Tobacco Settlement Financing Corp., 5.875%, 5/15/39

The accompanying notes are an integral part of these financial statements. 13

Pioneer Municipal High Income Advantage Trust

SCHEDULE OF INVESTMENTS 3/31/07 (continued)

ncipal bunt	S&P/ Moody's Ratings (unaudited)	
\$ 710,000 1,250,000	NR/NR NR/NR	Maryland - 0.6% Maryland Health & Higher Educational Facilities Authority Revenue, 5.25%, 1/1/27 Maryland Health & Higher Educational Facilities Authority Revenue, 5.3%, 1/1/37
1,000,000	AAA/Aaa	Massachusetts - 7.4% Lynn Massachusetts Water & Sewer Commission

2,400,0

1,657,2

2,747,8

\$ 22,126,2

\$ 10,378,6

5,064,2

2,265,1

\$ 17,708,0

\$ 509,5

\$ 4,991,7

\$ 795,4

10,053,3

\$ 10,848,7

Val

\$ 729,5

\$ 2,012,9

1,283,3

4,482,1

		General Revenue, 5.0%, 12/1/32
5,000,000	AAA/Aa1	Massachusetts Bay Transportation Authority Revenue, 5.25%, 7/1/31
2,195,000	BBB-/Baa3	Massachusetts Health & Educational Facilities Authority Revenue, 5.375%, 7/15/28
1,000,000+	BBB-/Baa3	Massachusetts Health & Educational Facilities Authority Revenue, 6.35%, 7/15/32
3,520,000(a)	NR/Aaa	Massachusetts State College Building Authority Project Revenue, RIB, 6.28%, 5/1/41 (144A)
900,000	BB/NR	Massachusetts State Development Finance Agency, 5.25%, 10/1/18
2,920,000	NR/Ba2	Massachusetts State Development Finance Agency, 6.0%, 11/1/28
4,710,000	NR/NR	Massachusetts State Development Finance Agency, 7.1%, 7/1/32
3,335,000(a)	NR/Aa3	Massachusetts State Housing Finance Agency, RIB, 6.989%, 12/1/45 (144A)
		Michigan - 5.0%
1,650,000	NR/NR	Crescent Academy Project, 5.75%, 12/1/36
3,000,000+	AAA/Baa3	Delta County Michigan Economic Development Corp., 6.25%, 4/15/27
3,000,000	BB/NR	Macomb County Hospital Finance Authority Revenue, 5.875%, 11/15/34
4,130,000	BB-/Ba3	Michigan State Hospital Finance Authority Revenue, 5.5%, 8/15/23
1,000,000	NR/NR	Michigan State Strategic Fund Solid Waste Disposal Revenue, 7.375%, 1/15/22
3,000,000(b)	NR/NR	Wayne Charter County Michigan Special Airport Facilities Revenue, 6.0%, 12/1/29
3,405,000(b)	NR/NR	Wayne Charter County Michigan Special Airport Facilities Revenue, 6.75%, 12/1/15

4 The accompanying notes are an integral part of these financial statements.

Pioneer Municipal High Income Advantage Trust

S&P/
Moody's

Principal Ratings
Amount (unaudited)

Missouri - 1.4%

\$ 1,850,000 NR/NR Kansas City Industrial Development Authority
Revenue, 5.875%, 1/1/37 (144A)

1,500,000 NR/Caa2 St. Louis Industrial Development Authority
Revenue, 7.2%, 12/15/28

1,840,000 NR/Caa2 St. Louis Industrial Development Authority
Revenue, 7.2%, 12/15/35

Val \$ 1,863,0

1,490,8

1,826,5

\$ 1,055,5

5,760,1

2,238,5

1,127,2

4,107,8

2,982,9

4,911,9

3,518,1

\$ 26,595,5

\$ 1,696,4

3,344,4

3,179,2

4,103,2

1,017,0

2,341,1

2,312,8

\$ 17,994,6

893,1

			\$ 5,180,4
		Montana - 0.7%	
2,445,000(c)	NR/NR	Hardin Increment Industrial Infrastructure	^ 1 (17 (
1,000,000	NR/NR	Development Revenue, 0.0%, 9/1/31 Two Rivers Authority, Inc., Project Revenue,	\$ 1,617,6
1,000,011	141., 24	7.375%, 11/1/27	1,031,5
			\$ 2,649,1
		Nevada - 2.1%	
2,425,000	B/NR	Clark County Industrial Development Revenue, 5.5%, 10/1/30	\$ 2,416,4
2,500,000	B/NR	Clark County Industrial Development Revenue, 5.9%, 11/1/32	2,501,1
1,600,000	NR/NR	Nevada State Department of Business & Industry, 7.25%, 1/1/23	2,301,1 1,677,6
1,000,000	NR/NR	Nevada State Department of Business & Industry, 7.375%, 1/1/30	1,077,6
70,000	NR/NR	7.3/5%, 1/1/30 Nevada State Department of Business & Industry, 7.375%, 1/1/40	1,051,6 73,5
			\$ 7,720,4
		New Hampshire - 1.5%	
1,000,000	A/NR	New Hampshire Health & Educational Facilities Authority Revenue, 5.375%, 1/1/34	\$ 1,058,4
1,125,000	NR/NR	New Hampshire Health & Educational Facilities	Y 1,000,-
		Authority Revenue, 5.875%, 7/1/34	1,184,5
3,000,000+	NR/NR	New Hampshire Higher Educational & Health Facilities Authority Revenue, 6.25%, 1/1/18	3,107,7
			\$ 5,350,7
13,000,000	В/В3	New Jersey - 8.5% New Jersey Economic Development Authority Revenue, 6.25%, 9/15/29	\$ 13,440,3
2,500,000	BBB/Baa1	New Jersey Health Care Facilities Financing	პ Tე, 440, ე
		Authority Revenue, 5.375%, 7/1/33	2,609,5
2,495,000(a)	NR/Aaa	New Jersey State Turnpike Authority, RIB, 7.785%, 1/1/28 (144A)	4,015,3
2,493,000(a)	NK/Add		4,015

The accompanying notes are an integral part of these financial statements. 15

Pioneer Municipal High Income Advantage Trust

SCHEDULE OF INVESTMENTS 3/31/07 (continued)

Principal Amount		S&P/ Moody's Ratings (unaudited)	
\$	1,000,000+	AAA/Aaa	New Jersey - (continued) Tobacco Settlement Financing Corp.,

Val

0.050.000	/-	6.25%, 6/1/43	\$ 1,137,0
3,250,000+	AAA/Aaa	Tobacco Settlement Financing Corp.,	2 704 3
5,000,000+	AAA/Aaa	6.75%, 6/1/39 Tobacco Settlement Financing Corp.,	3,784,3
3,000,0001	nnn/ naa	7.0%, 6/1/41	5,887,3
			\$ 30,873,9
		New York - 10.6%	
3,000,000	NR/NR	Dutchess County Industrial Development Agency	
		Revenue, 7.5%, 3/1/29	\$ 3,334,9
5,000,000	A/A3	Nassau County New York Industrial Development	
	, -	Agency Revenue, 5.25%, 6/1/27	5,186,1
6,980,000	BB-/Ba2	New York City Industrial Development Agency,	
	- /	5.25%, 12/1/32	6,944,4
2,000,000	A/NR	New York City Industrial Development Agency, 5.375%, 6/1/23	2,100,8
2,000,000	CCC+/Caa1	New York City Industrial Development Agency, 6.9%, 8/1/24	2,018,0
3,950,000	BB-/Ba2	New York City Industrial Development Agency,	•
		7.625%, 12/1/32	4,415,3
2,600,000	NR/NR	New York City Industrial Development Agency,	
		7.8%, 1/1/16	2,633,3
5,000,000	AAA/Aaa	New York State Environmental Facilities Corp.,	
		5.0%, 6/15/33	5,221,8
4,500,000	A/NR	Suffolk County New York Industrial Development	
		Agency, 5.0%, 6/1/36	4,660,3
2,000,000	NR/NR	Yonkers Industrial Development Agency Civic	
		Facilities Revenue, 6.15%, 3/1/15	2,010,8
			\$ 38,526,1
		North Carolina - 5.8%	
11,350,000	NR/NR	Charlotte North Carolina Special Facilities	
11,330,000	INIX/ INIX	Revenue, 5.6%, 7/1/27	\$ 11,413,
7,140,000	NR/NR	Charlotte North Carolina Special Facilities	Y 11,310,
7,140,000	INIX\ INIX	Revenue, 7.75%, 2/1/28	7,633,
2,000,000	AA+/Aa1	North Carolina Capital Facilities Finance Agency	,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
2,000,000	11111/1141	Revenue, 5.0%, 10/1/41	2,095,
		Revenue, 5.55, 15, 17	

The accompanying notes are an integral part of these financial statements.

Pioneer Municipal High Income Advantage Trust

Principal Amount		S&P/ Moody's Ratings (unaudited)	
\$	3,800,000	B/NR	Ohio - 2.7% Belmont County Health System Revenue,

Val

\$ 21,143,1

1,000,000	B/NR	5.7%, 1/1/13 Belmont County Health System Revenue, 5.8%, 1/1/18	\$
5,000,000	B-/B3	Cleveland Airport Special Revenue, 5.375%, 9/15/27	
			\$
		Oklahoma - 1.0%	
2,045,000	BB/NR	Jackson County Memorial Hospital Authority Revenue, 7.3%, 8/1/15	\$
1,500,000	B/Caa1	Tulsa Municipal Airport Transportation Revenue, 7.35%, 12/1/11	
			\$
		Pennsylvania - 7.1%	
3,000,000	B+/Ba3	Allegheny County Hospital Development Authority Revenue, 9.25%, 11/15/22	\$
500,000	B+/Ba3	Allegheny County Hospital Development Authority Revenue, 9.25%, 11/15/30	
1,000,000	BBB-/NR	Clarion County Hospital Authority Revenue, 5.625%, 7/1/21	
3,600,000	B/NR	Columbia County Hospital Authority Revenue, 5.85%, 6/1/24	
3,200,000	NR/NR	Delaware County Industrial Development Authority Revenue, 9.0%, 8/1/31	
1,250,000	BBB/Ba2	Hazleton Health Services Authority Hospital Revenue, 6.125%, 7/1/16	
3,360,000	NR/Baa3	Montgomery County Higher Education & Health Authority Hospital Revenue, 6.6%, 7/1/10	
1,430,000	BB+/NR	Pennsylvania Economic Development Financing Authority Revenue, 5.125%, 6/1/18	
1,805,000	BB+/NR	Pennsylvania Economic Development Financing Authority Revenue, 5.3%, 6/1/10	
2,330,000	BB+/NR	Pennsylvania Economic Development Financing Authority Revenue, 5.35%, 6/1/11	
2,005,000	B-/NR	Scranton-Lackawanna Health & Welfare Authority Revenue, 6.1%, 7/1/11	
2,245,000	B-/NR	Scranton-Lackawanna Health & Welfare Authority Revenue, 6.15%, 7/1/12	

The accompanying notes are an integral part of these financial statements. 17

Pioneer Municipal High Income Advantage Trust

SCHEDULE OF INVESTMENTS 3/31/07 (continued)

S&P/
Moody's
Principal Ratings
Amount (unaudited)

Val

3,746,6

5,014,7

9,739,3

2,055,9

1,505,3

3,561,2

3,541,3

1,013,2

3,364,5

2,596,0

1,253,1

3,418,8

1,413,7

1,810,3

2,337,4

2,050,2

2,295,6

\$ 25,685,7

591,1

978,0

Rhode Island - 3.9%

\$ 4,485,000	NR/NR	Central Falls Rhode Island Detention Facilities Revenue, 7.25%, 7/15/35	\$ 5,039,1
8,285,000	BBB/Baa3	Tobacco Settlement Financing Corp., 6.25%, 6/1/42	8,942,0
			\$ 13,981,2
		South Carolina - 5.7%	
1,500,000	B-/NR	Connector 2000 Association, Inc., Toll Road Revenue, 5.375%, 1/1/38	\$ 1,394,9
1,600,000	BBB/NR	Loris Community Hospital District, 5.625%, 1/1/29	1,650,8
7,140,000+	BBB+/Baa1	South Carolina Jobs Economic Development Authority Revenue, 6.375%, 8/1/34	8,174,8
860,000+	BBB+/Baa1	South Carolina Jobs Economic Development Authority Revenue, 6.375%, 8/1/34	980 , 7
3,000,000+	AAA/NR	South Carolina Jobs Economic Development Authority Revenue, 8.0%, 10/1/31	3,467,5
4,400,000	BBB/Baa3	Tobacco Settlement Revenue Management, 6.375%, 5/15/30	5,118,7
			\$ 20,787,6
1,000,000	BBB+/Baa2	Tennessee - 2.4% Johnson City Health & Educational Facilities Board	
7,000,000		Hospital Revenue, 7.5%, 7/1/33	\$ 1,159,5
7,000,000	NR/Ba2	<pre>Knox County Health Educational & Housing Facilities Board Hospital Revenue,</pre>	
		6.5%, 4/15/31	7,348,1
			\$ 8,507,7
		Texas - 13.6%	
8,650,000	BB/NR	Brazos River Authority Pollution Control Revenue, 6.75%, 10/1/38	\$ 9,501,4
7,350,000	NR/NR	<pre>Gulf Coast Industrial Development Authority, 7.0%, 12/1/36</pre>	7,902,0
10,000,000	B-/B3	Houston Texas Airport System Revenue, 6.75%, 7/1/29	10,703,4
1,000,000	NR/NR	IAH Public Facility Corp., 6.0%, 5/1/16	1,000,0
1,000,000	NR/NR	IAH Public Facility Corp., 6.0%, 5/1/21	977 , 8
1,350,000	NR/NR	IAH Public Facility Corp., 6.125%, 5/1/26	1,314,8
845,000	NR/NR	Lubbock Health Facilities Development Corp., 6.5%, 7/1/26	884,8
2,000,000	NR/NR	Lubbock Health Facilities Development Corp.,	
		6 625% 7/1/26	2 100 5

18 The accompanying notes are an integral part of these financial statements.

6.625%, 7/1/36

Pioneer Municipal High Income Advantage Trust

S&P/ Moody's 2,100,5

rincipal nount	Ratings (unaudited)		Val
		Texas - (continued)	
\$ 7,750,000	BBB-/Ba1	Matagorda County Navigation District Number 1 Revenue, 5.95%, 5/1/30	\$ 7,964,4
1,885,000(b)	NR/Ca	Panhandle Texas Regional Housing Finance,	
5,000,000	NR/Baa3	8.125%, 3/1/31 Tomball Hospital Authority, 6.0%, 7/1/25	189,7 5,188,5
1,500,000	NR/NR	Willacy County Local Government Corp.,	
		6.0%, 3/1/09	1,519,6
			\$ 49,247,3
		Utah - 0.5%	
1,600,000	NR/NR	Spanish Fork Charter School Revenue, 5.7%, 11/15/36 (144A)	\$ 1,648,1
		Virginia - 0.4%	
1,555,000+	AAA/NR	Pocahontas Parkway Association of Virginia Toll Road Revenue, 5.25%, 8/15/09	\$ 1,618,6
		Washington - 7.1%	
5,000,000	AAA/Aaa	Port Seattle Washington Special Facilities Revenue, 5.0%, 4/1/31	\$ 5,160,5
5,500,000(b)	NR/NR	Port Seattle Washington Special Facilities	, ,
1,385,000	BBB/Baa3	Revenue, 7.25%, 4/1/30 Tobacco Settlement Authority Revenue,	5,502,6
1,000,011	222, 2011	6.5%, 6/1/26	1,516,2
6,960,000(a)	NR/Aaa	Washington State Economic Development Finance Authority, RIB, 6.1%, 6/1/38 (144A)	8,223,0
5,000,000	NR/NR	Washington State Housing Finance Commission	0,223,0
		Nonprofit Revenue Bonds, 5.625%, 1/1/27	5,164,0
			\$ 25,566,4
		Wisconsin - 0.6%	
1,000,000	NR/NR	Wisconsin State Health & Educational Facilities	
1,000,000	NR/NR	Authority Revenue, 6.125%, 4/1/24 Wisconsin State Health & Educational Facilities	\$ 1,055,5
1,000,000	IVIV/ IVIV	Authority Revenue, 6.25%, 4/1/34	1,058,1
			\$ 2,113,6
		TOTAL TAX-EXEMPT OBLIGATIONS	
		(Cost \$427,158,444)	\$475,381,6

The accompanying notes are an integral part of these financial statements. 19

Pioneer Municipal High Income Advantage Trust

SCHEDULE OF INVESTMENTS 3/31/07 (continued)

S&P/ Moody's

Principal Amount	Ratings (unaudited)		V
\$ 13,000,000(d)	NR/NR	MUNICIPAL COLLATERALIZED DEBT OBLIGATION - 3.6% of Net Assets Non-Profit Preferred Funding Trust I, Series E, 8.0%, 9/15/37 (144A)	\$ 13,011
		TOTAL MUNICIPAL COLLATERALIZED DEBT	
		OBLIGATION (Cost \$13,000,000)	\$ 13,011
Shares		TAX-EXEMPT MONEY MARKET MUTUAL FUND - 0.8% of Net Assets	
3,152,545		FUND - 0.8% OF NET ASSETS BlackRock Liquidity Funds MuniFund Portfolio	\$ 3,152
		TOTAL TAX-EXEMPT MONEY MARKET MUTUAL	
		(Cost \$3,152,545)	\$ 3,152
		TOTAL INVESTMENTS IN SECURITIES - 135.8% (Cost \$443,310,989) (e) (f)	\$ 491,545
		OTHER ASSETS AND LIABILITIES - 5.7%	\$ 20,423
		PREFERRED SHARES AT REDEMPTION VALUE, INCLUDING DIVIDENDS PAYABLE - (41.5)%	\$ (150 , 080
		NET ASSETS APPLICABLE TO COMMON SHAREOWNERS - 100.0%	\$ 361,888 =======
20 The accompanyi	ing notes are a	n integral part of these financial statements.	
Pioneer Municipal	High Income Ad	vantage Trust	

Act of 1933. Such securities may be resold normally to qualified institutional buyers in a transaction exempt from registration. At March 31, 2007, the value of these securities amounted to \$65,227,843, or 18.0% of total net assets applicable to common shareowners.

RIB Residual Interest Bonds.

NR Security not rated by S&P or Moody's.

- Prerefunded bonds have been collateralized by U.S. Treasury securities or U.S. Government Agencies which are held in escrow to pay interest and principal on the tax exempt issue and to retire the bonds in full at the earliest refunding date.
- The interest rate is subject to change periodically and inversely (a) based upon prevailing market rates. The interest rate shown is the rate at March 31, 2007.
- (b) Security is in default and is non-income producing.

- (c) Debt obligation initially issued at one coupon which converts to a higher coupon at a specific date. The rate shown is the rate at March 31, 2007.
- (d) The interest rate is subject to change periodically. The interest rate shown is the rate at March 31, 2007.
- (e) The concentration of investments by type of obligation/market sector is as follows:

Insured	13.1%
General Obligation	4.6
Revenue Bonds:	
Health Revenue	25.1
Development Revenue	11.6
Airport Revenue	11.4
Tobacco Revenue	9.6
Transportation Revenue	6.1
Facilities Revenue	6.0
Pollution Control Revenue	5.7
Other Revenue	2.1
Housing Revenue	1.8
Education Revenue	1.5
Water Revenue	1.1
Power Revenue	0.3
	100.0%
	=====

(f) At March 31, 2007, the net unrealized gain on investments based on cost for federal income tax purposes of \$440,347,551 was as follows:

	========
Net unrealized gain	\$51 , 197 , 951
there is an excess of tax cost over value	(3,174,895)
Aggregate gross unrealized loss for all investments in which	
there is an excess of value over tax cost	\$54 , 372 , 846
Aggregate gross unrealized gain for all investments in which	

For financial reporting purposes net unrealized gain on investments was \$48,234,513 and cost of investments aggregated \$443,310,989.

Purchases and sales of securities (excluding temporary cash investments) for the year ended March 31, 2007, aggregated \$85,707,843 and \$94,249,595, respectively.

The accompanying notes are an integral part of these financial statements. 21

Pioneer Municipal High Income Advantage Trust

STATEMENT OF ASSETS AND LIABILITIES 3/31/07

ASSETS:		
Investments in securities, at value (cost \$443,310,989)	\$491,545,502	
Receivables -	11 (20 20)	
Investment securities sold Interest	11,628,396 9,189,086	
Unrealized appreciation on interest rate swaps	1,055,792	
Other assets	443,638	
Prepaid expenses	40,007	
Total assets	\$513,902,421	
LIABILITIES:	0 1 501 044	
Dividends payable to common shareowners Due to custodian	\$ 1,591,844 9,243	
Due to affiliate	269,435	
Administration fee payable	30,543	
Accrued expenses	32,650	
	, 	
Total liabilities	\$ 1,933,715	
PREFERRED SHARES AT REDEMPTION VALUE:		
\$25,000 liquidation value per share applicable to 6,000		
shares including dividends payable of \$80,237	\$150,080,237	
NET ASSETS APPLICABLE TO COMMON SHAREOWNERS:		
Paid-in capital	\$323,671,003	
Undistributed net investment income	3,083,246	
Accumulated net realized loss on investments and interest		
rate swaps	(14,156,085)	
Net unrealized gain on investments	48,234,513	
Net unrealized gain on interest rate swaps	1,055,792	
Not aggets applicable to gommon sharecomens	6261 000 460	
Net assets applicable to common shareowners	\$361,888,469	
NET ASSET VALUE PER SHARE:		
No par value, (unlimited number of shares authorized)		
Based on \$361,888,469/22,740,627 common shares	\$ 15.91	
	========	
22 The accompanying notes are an integral part of these	financial statements	
22 The accompanying notes are an integral part of these	TIMANCIAI SCACEMENCS.	
Pioneer Municipal High Income Advantage Trust		
STATEMENT OF OPERATIONS		
For the Year Ended 3/31/07		
INVESTMENT INCOME:		
Interest	\$ 30,485,	
EXPENSES:		
Management fees	\$ 3,019,562	
Administration fees and reimbursement	459,068	
Transfer agent fees and expenses	39,158	
Auction agent fees	390,422	
-		

Custodian fees	23,272	
Registration fees	23,272	
Professional fees	126,680	
Printing expense	17,071	
Trustees' fees	10,238	
Pricing fees	20,267	
Insurance fees		
Miscellaneous	11,764	
Miscellaneous	17 , 751	
Total expenses		\$ 4,159,101
Less management fees waived and expenses		
reimbursed by Pioneer Investment		
Management, Inc.		(47,982)
Less fees paid indirectly		(63)
Net expenses		\$ 4,111,056
Net investment income		\$ 26,374,210
REALIZED AND UNREALIZED GAIN ON INVESTMENTS AND		
INTEREST RATE SWAPS:		
Net realized gain from:		
Investments	\$ 4,858,790	
Interest rate swaps	651,446	\$ 5,510,236
Change in net unrealized gain from:		
Investments	\$13,733,640	
Interest rate swaps		\$ 12,752,072
Indologo lado swapo		
Net gain on investments and interest rate swaps		\$ 18,262,308
DISTRIBUTIONS TO PREFERRED SHAREOWNERS FROM		
NET INVESTMENT INCOME		\$ (5,202,891)
Net increase in net assets applicable to common		
shareowners resulting from operations		\$ 39,433,627
		========

The accompanying notes are an integral part of these financial statements. 23

Pioneer Municipal High Income Advantage Trust

STATEMENTS OF CHANGES IN NET ASSETS

For the Years Ended 3/31/07 and 3/31/06

	Year Ended 3/31/07	Year Ended 3/31/06
FROM OPERATIONS:		
Net investment income	\$ 26,374,210	\$ 26,621,808
Net realized gain (loss) on investments and		
interest rate swaps	5,510,236	(13,577,265)
Change in net unrealized gain on investments		
and interest rate swaps	12,752,072	22,405,597

Distributions to preferred shareowners from net investment income	(5,202,89	91)	(3,961,976)
Net increase in net assets applicable to common shareowners	\$ 39,433,62	27 \$	31,488,164
DISTRIBUTIONS TO COMMON SHAREOWNERS FROM: Net investment income (\$0.86 and \$0.99 per share, respectively)	\$ (19,556,93	39) \$	(22,481,571)
Total distributions to common shareowners	\$ (19,556,93	39) \$	(22,481,571)
FROM TRUST SHARE TRANSACTIONS: Reinvestment of distributions	\$	-	630,886
Net increase in net assets applicable to common shareowners resulting from Trust share transactions	\$	- \$	630,886
Net increase in net assets applicable to common shareowners NET ASSETS APPLICABLE TO COMMON	\$ 19,876,68	38 \$	9,637,479
SHAREOWNERS: Beginning of year	342,011,78	31	332,374,302
End of year	\$ 361,888,46		342,011,781
Undistributed net investment income	\$ 3,083,24	16 \$	850,071

²⁴ The accompanying notes are an integral part of these financial statements.

Pioneer Municipal High Income Advantage Trust

FINANCIAL HIGHLIGHTS

Year	Year
Ended	Ended
3/31/06	3/31/05
\$ 14.64	\$ 14.51
\$ 1.17	\$ 1.26
0.39	0.18
(0.17)	(0.09)
_	(0.01)
 \$ 1 39	\$ 1.34
T 1.00	, 1.51
	## Ended 3/31/06 ## 14.64 ## 1.17 ## 0.39

24

Net investment income Net realized gains	(0.86)	(0.99)	(1.13) (0.09)
Capital charge with respect to issuance of:			(/
Common shares	_	_	0.01
Preferred shares	_	_	_
Net increase in net asset value	\$ 0.87	\$ 0.40	\$ 0.13
Net asset value, end of period(d)	\$ 15.91	\$ 15.04	\$ 14.64
			======
Market value, end of period(d)	\$ 15.61	\$ 14.99	\$ 14.37
Total return(e)	====== 10.21%	====== 11.55%	====== 4.07%
Ratios to average net assets of common	10.216	11.33%	4.076
shareowners			
Net expenses(f)	1.16%	1.16%	1.18%
Net investment income before preferred	1.100	1.10%	1.10%
share dividends	7.47%	7.88%	8.94%
Preferred share dividends	1.47%	7.00% 1.17%	0.64%
Net investment income available to	1.4/0	1.1/0	0.04%
common shareowners	6.00%	6.71%	8.30%
Portfolio turnover	17%	19%	39%
Net assets of common shareowners,	1/6	196	396
•	¢2.C1 000	¢242_012	6222 274
end of period (in thousands)	\$361,888	\$342,012	\$332,374
Preferred shares outstanding (in thousands)	\$150,000	\$150,000	\$150,000
Asset coverage per preferred share,	¢ 05 200	¢ 00 011	¢ 00 200
end of period	\$ 85,328	\$ 82,011	\$ 80,396
Average market value per preferred share	\$ 25,000	\$ 25,000	\$ 25,000
Liquidation value, including dividends	A 05 010	A 05 000	A 05 000
payable, per preferred share	\$ 25,013	\$ 25,009	\$ 25,000
Ratios to average net assets of common			
shareowners before waivers and			
reimbursement of expenses	4 400	1 1 60	1 100
Net expenses(f)	1.18%	1.16%	1.19%
Net investment income before preferred			
share dividends	7.45%	7.88%	8.93%
Preferred share dividends	1.47%	1.17%	0.64%
Net investment income available to			
common shareowners	5.98%	6.71%	8.29%

The accompanying notes are an integral part of these financial statements. 25

Pioneer Municipal High Income Advantage Trust

FINANCIAL HIGHLIGHTS (continued)

(a) The per common share data presented above is based upon the average common

- (a) The per common share data presented above is based upon the average common shares outstanding for the periods presented.
- (b) The Trust's common shares were first publicly offered on October 15, 2003.
- (c) Net asset value immediately after the closing of the first public offering was \$14.30.
- (d) Net asset value and market value are published in Barron's on Saturday, The Wall Street Journal on Monday and The New York Times on Monday and Saturday.
- (e) Total investment return is calculated assuming a purchase of common shares at the current market value on the first day and a sale at the current market value on the last day of the periods reported. Dividends and distributions, if any, are assumed for purposes of this calculation to be

reinvested at prices obtained under the Trust's dividend reinvestment plan. Total investment return does not reflect brokerage commissions. Total investment return less than a full period is not annualized. Past performance is not a quarantee of future results.

- (f) Expense ratios do not reflect the effect of dividend payments to preferred shareowners.
- (g) Annualized.

The information above represents the audited operating performance data for a share of common stock outstanding, total investment return, ratios to average net assets of common shareowners and other supplemental data for the periods indicated. This information has been determined based upon financial information provided in the financial statements and market value data for the Trust's common shares.

26 The accompanying notes are an integral part of these financial statements.

Pioneer Municipal High Income Advantage Trust

NOTES TO FINANCIAL STATEMENTS 3/31/07

1. Organization and Significant Accounting Policies

Pioneer Municipal High Income Advantage Trust (the "Trust") was organized as a Delaware statutory trust on August 6, 2003. Prior to commencing operations on October 20, 2003, the Trust had no operations other than matters relating to its organization and registration as a diversified, closed-end management investment company under the Investment Company Act of 1940, as amended.

The Trust may invest in both investment and below investment grade (high-yield) municipal securities with a broad range of maturities and credit ratings. Debt securities rated below investment grade are commonly referred to as "junk bonds" and are considered speculative. These securities involve greater risk of loss, are subject to greater price volatility, and are less liquid, especially during periods of economic uncertainty or change, than higher rated debt securities.

Information regarding the Trust's principal risks is contained in the Trust's original offering prospectus, with additional information included in the Trust's Shareowner reports from time to time. Please refer to those documents when considering the Trust's risks. At times, the Trust's investments may represent industries or industry sectors that are interrelated or have common risks, making it more susceptible to any economic, political, or regulatory developments or other risks affecting those industries and sectors.

The Trust's financial statements have been prepared in conformity with U.S. generally accepted accounting principles that require the management of the Trust to, among other things, make estimates and assumptions that affect the reported amounts of assets and liabilities, and the reported amounts of income, expenses and gains and losses on investments during the reporting year. Actual results could differ from those estimates.

The following is a summary of significant accounting policies followed by the Trust in the preparation of its financial statements, which are consistent with those policies generally accepted in the investment company industry:

A. Security Valuation

Security transactions are recorded as of trade date. Securities are valued at prices supplied by independent pricing services, which consider such

factors as Treasury spreads, yields, maturities

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Pioneer Municipal High Income Advantage Trust

NOTES TO FINANCIAL STATEMENTS 3/31/07

continued

and ratings. Valuations may be supplemented by dealers and other sources, as required. The values of interest rate swaps are determined by obtaining dealer quotations. Securities for which market quotations are not readily available are valued at their fair values as determined by, or under the direction of, the Board of Trustees. At March 31, 2007, there were no securities fair valued. Temporary cash investments are valued at net asset value.

Discount and premium on debt securities are accreted or amortized, respectively, daily on an effective yield to maturity basis and are included in interest income. Interest income, including interest bearing cash accounts, is recorded on an accrual basis.

Gains and losses on sales of investments are calculated on the identified cost method for both financial reporting and federal income tax purposes.

B. Federal Income Taxes

It is the Trust's policy to comply with the requirements of the Internal Revenue Code applicable to regulated investment companies and to distribute all of its taxable income and net realized capital gains, if any, to its shareowners. Therefore, no federal income tax provision is required.

The amounts and characterizations of distributions to shareowners for financial reporting purposes are determined in accordance with federal income tax rules. Therefore, the source of the Trust's distributions may be shown in the accompanying financial statements as either from or in excess of net investment income or net realized gain on investments transactions, or from paid-in capital, depending on the type of book/tax differences that may exist.

At March 31, 2007, the Trust reclassified \$618,795 to increase undistributed net investment income and to increase accumulated net realized loss on investments. The reclassification has no impact on the net asset value of the Trust and presents the Trust's capital accounts on a tax basis.

At March 31, 2007, the Trust had a capital loss carryforward of \$14,156,085 which will expire in 2014, if not utilized.

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Pioneer Municipal High Income Advantage Trust

The tax character of distributions paid to common and preferred shareowners

during the years ended March 31, 2007 and March 31, 2006 were as follows:

	2007	2006
Distributions paid from: Tax exempt income Ordinary income	\$23,734,616 1,025,214	\$26,443,547 -
Total	\$24,759,830 ======	\$26,443,547 =======

The following shows components of distributable earnings on a federal income tax basis at March 31, 2007.

	2007
Undistributed tax-exempt income	\$ 1,869,583
Undistributed ordinary income	274,297
Capital loss carry forward	(14,156,085)
Dividends payable	(1,672,081)
Unrealized appreciation	51,901,752
Total	\$ 38,217,466
	=========

The difference between book basis and tax basis unrealized appreciation is primarily attributable to the difference between book and tax amortization methods for premiums and discounts on fixed income securities, the accrual of income on securities in default and the difference between book and tax accounting for swap agreements.

C. Automatic Dividend Reinvestment Plan

All common shareowners automatically participate in the Automatic Dividend Reinvestment Plan (the "Plan"), under which participants receive all dividends and capital gain distributions (collectively, "dividends") in full and fractional common shares of the Trust in lieu of cash. Shareowners may elect not to participate in the Plan. Shareowners not participating in the Plan receive all dividends and capital gain distributions in cash. Participation in the Plan is completely voluntary and may be terminated or resumed at any time without penalty by notifying American Stock Transfer & Trust

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Pioneer Municipal High Income Advantage Trust

----NOTES TO FINANCIAL STATEMENTS 3/31/07 (continued)

Company, the agent for shareowners in administering the Plan (the "Plan Agent"), in writing prior to any dividend record date; otherwise such termination or resumption will be effective with respect to any subsequently declared dividend or other distribution.

Whenever the Trust declares a dividend on common shares payable in cash, participants in the Plan will receive the equivalent in common shares acquired by the Plan Agent either (i) through receipt of additional unissued but authorized common shares from the Trust or (ii) by purchase of outstanding common shares on the New York Stock Exchange or elsewhere. If, on the payment date for any dividend, the net asset value per common share is equal to or less than the market price per share plus estimated brokerage trading fees ("market premium"), the Plan Agent will invest the dividend amount in newly issued common shares. The number of newly issued common shares to be credited to each account will be determined by dividing the dollar amount of the dividend by the net asset value per common share on the date the shares are issued, provided that the maximum discount from the then current market price per share on the date of issuance does not exceed 5%. If, on the payment date for any dividend, the net asset value per common share is greater than the market value ("market discount"), the Plan Agent will invest the dividend amount in common shares acquired in open-market purchases. There are no brokerage charges with respect to newly issued common shares. However, each participant will pay a pro rata share of brokerage trading fees incurred with respect to the Plan Agent's open-market purchases. Participating in the Plan does not relieve shareowners from any federal, state or local taxes which may be due on dividends paid in any taxable year. Shareowners holding Plan shares in a brokerage account may not be able to transfer the shares to another broker and continue to participate in the Plan.

2. Management Agreement

Pioneer Investment Management, Inc. ("PIM"), a wholly owned indirect subsidiary of UniCredito Italiano S.p.A. ("UniCredito Italiano") manages the Trust's portfolio. Management fees payable under the Trust's Advisory Agreement with PIM are calculated daily at the annual rate of 0.60% of the Trust's average daily managed assets. "Managed assets" is the average daily value of the Trust's total assets minus the sum of the Trust's liabilities, which liabilities exclude debt related

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Pioneer Municipal High Income Advantage Trust

to leverage, short-term debt and the aggregate liquidation preference of any outstanding preferred shares. Also, PIM has agreed for the first three years of the Trust's investment operations to limit the Trust's total annual expenses excluding offering costs for common and preferred shares, interest expense, the cost of defending or prosecuting any claim or litigation to which the Trust is a party (together with any amount in judgment or settlement), indemnification expense or taxes incurred due to the failure of the Trust to qualify as a regulated investment company under the Code or any other non-recurring or non-operating expenses to 0.80% of the Trusts average daily managed assets. The dividend on any preferred shares is not an expense for this purpose. For the

year ended March 31, 2007, the expense reduction under such arrangements was \$47,982. For the year ended March 31, 2007, the net management fee was equivalent to 0.59% of the Trust's average daily managed assets, which was equivalent to 0.84% of the Trust's average daily net assets attributable to the common shareowners.

In addition, under PIM's management and administration agreements, certain other services and costs are paid by PIM and reimbursed by the Trust. At March 31, 2007, \$269,435 was payable to PIM related to management costs, administrative costs and certain other services and is included in "Due to affiliate" on the Statement of Assets and Liabilities.

The Trust has retained Princeton Administrators, LLC ("Princeton") to provide certain administrative services to the Trust on its behalf. The Trust pays Princeton a monthly fee at an annual rate of 0.07% of the average daily value of the Trust's managed assets, subject to a minimum monthly fee of \$10,000.

3. Transfer Agents

Pioneer Investment Management Shareholder Services, Inc. ("PIMSS"), a wholly owned indirect subsidiary of UniCredito Italiano, through a sub-transfer agency agreement with American Stock Transfer & Trust Company provides substantially all transfer agent and shareowner services related to the Trust's common shares at negotiated rates. Deutsche Bank Trust Company Americas ("Deutsche Bank") is the transfer agent, registrar, dividend paying agent and redemption agent with respect to the Trust's Auction Preferred Shares ("APS"). The Trust pays Deutsche Bank an annual fee,

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Pioneer Municipal High Income Advantage Trust

NOTES TO FINANCIAL STATEMENTS 3/31/07

(continued)

as is agreed to from time to time by the Trust and Deutsche Bank, for providing such services.

4. Expense Offset Arrangements

The Trust has entered into an arrangement with its custodian whereby credits realized as a result of uninvested cash balances are used to reduce a portion of the Trust's custodian expenses. For the year ended March 31, 2007, the Trust's expenses were reduced by \$63 under such arrangement.

5. Interest Rate Swaps

The Trust may enter into interest rate swap transactions to attempt to protect itself from increasing dividend or interest expense on its leverage resulting from increasing short-term interest rates. The cost of leverage may rise with an increase in interest rates, generally having the effect of lower yields and potentially lower dividends to common shareowners. Interest rate swaps can be used to "lock in" the cost of leverage and reduce the negative impact that rising short-term interest rates would have on the Trust's leveraging costs.

An interest rate swap is an agreement between two parties, which involves exchanging floating rate and fixed rate interest payments for a specified period of time. Interest rate swaps involve the accrual of the net interest payments between the parties on a daily basis, with the net amount recorded within the

unrealized appreciation/ depreciation of interest rate swaps on the Statement of Assets and Liabilities. Once the interim payments are settled in cash, at the pre-determined dates specified in the agreement, the net amount is recorded as realized gain or loss from interest rate swaps on the Statement of Operations. During the term of the swap, changes in the value of the swap are recognized as unrealized gains and losses by "marking-to market" the market value of the swap based on values obtained from dealer quotations. When the swap is terminated, the Trust will record a realized gain or loss equal to the difference, if any, between the proceeds from (or cost of) closing the contract and the cost basis of the contract. The Trust is exposed to credit risk in the event of non-performance by the other party to the interest rate swap. However, at March 31, 2007 the Trust does not anticipate non-performance by any counterparty. Risk may also arise with regard to market movements in the value of the swap arrangement that do not

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Pioneer	Municipal	High	Income	Advantage	Trust

exactly offset the changes in the related dividend requirement or interest expense on the Trust's leverage.

Under the terms of the agreement entered into by the Trust, the Trust receives a floating rate of interest and pays a fixed rate of interest for the term. Details of the swap agreement outstanding as of March 31, 2007 were as follows:

Counterparty	Termination	Notional	Fixed	Floating	Unrealized
	Date	Amount (000)	Rate	Rate	Appreciation
UBS AG	April 5, 2009	\$75 , 000	2.665%	1 month BMA	\$1,055,792

6. Trust Shares

There are an unlimited number of common shares of beneficial interest authorized. Of the 22,740,627 common shares of beneficial interest outstanding at March 31, 2007, PIM owned 6,981 shares.

Transactions in common shares of beneficial interest for the years ended March 31, 2007 and March 31, 2006 were as follows:

	2007	2006 	
Shares outstanding at beginning of year Reinvestment of distributions	22,740,627	22,698,047 42,580	

Shares outstanding at end of year

22,740,627

22,740,627

The Trust may classify or reclassify any unissued common shares of beneficial interest into one or more series of preferred shares of beneficial interest. As of March 31, 2007, there were 6,000 APS as follows: Series A - 3,000 and Series B - 3,000.

Dividends on Series A and Series B are cumulative at a rate, which is reset every seven days based on the results of an auction. Dividend rates ranged from 2.94% to 4.05% during the year ended March 31, 2007.

The Trust may not declare dividends or make other distributions on its common shares or purchase any such shares if, at the time of the declaration, distribution or purchase, asset coverage with respect to the outstanding preferred shares would be less than 200%.

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Pioneer Municipal High Income Advantage Trust

NOTES TO FINANCIAL STATEMENTS 3/31/07

(continued)

The APS are redeemable at the option of the Trust, in whole or in part, on any dividend payment date at \$25,000 per share plus any accumulated or unpaid dividends, whether or not declared. The APS are also subject to mandatory redemption at \$25,000 per share plus any accumulated or unpaid dividends, whether or not declared, if certain requirements relating to the composition of the assets and liabilities of the Trust as set forth in the Agreement and Declaration of Trust are not satisfied.

The holders of APS have voting rights equal to the holders of the Trust's common shares (one vote per share) and will vote together with holders of the common shares as a single class. However, holders of APS are also entitled to elect two of the Trust's Trustees. In addition, the Investment Company Act of 1940, as amended, requires that along with approval by shareowners that might otherwise be required, the approval of the holders of a majority of any outstanding preferred shares, voting separately as a class, would be required to (a) adopt any plan of reorganization that would adversely affect the preferred shares and (b) take any action requiring a vote of security holders, including, among other things, changes in the Trust's subclassification as a closed-end management investment company or changes in its fundamental investment restrictions.

7. New Pronouncements

On July 13, 2006, the Financial Accounting Standards Board ("FASB") released FASB Interpretation No. 48 "Accounting for Uncertainty in Income Taxes" ("FIN 48"). FIN 48 provides guidance for how uncertain tax positions should be recognized, measured, presented and disclosed in the financial statements. FIN 48 requires the evaluation of tax positions taken or expected to be taken in the course of preparing the Trust's tax returns to determine whether the tax positions have a "more-likely-than-not" probability of being sustained by the applicable tax authority. Tax positions deemed to not meet the more-likely-than-not threshold would be recorded as a tax benefit or expense in the reporting period in which they are realized. Adoption of FIN 48 is required for fiscal years beginning after December 15, 2006 and is to be applied to all

open tax years as of no later than September 28, 2007. At this time, management is evaluating the implications of FIN 48 and any impact in the financial statements has not yet been determined.

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Pioneer Municipal High Income Advantage Trust

In addition, in September 2006, Statement of Financial Accounting Standards No. 157, Fair Value Measurements ("SFAS 157"), was issued and is effective for fiscal years beginning after November 15, 2007. SFAS 157 defines fair value, establishes a framework for measuring fair value and expands disclosures about fair value measurements. At this time, management is currently evaluating the implications of SFAS 157 and its impact on the Trust's financial statement disclosures, if any, has not been determined.

8. Subsequent Events

Subsequent to March 31, 2007, the Board of Trustees of the Trust declared a dividend from undistributed net investment income of \$0.07 per common share payable April 30, 2007, to shareowners of record on April 16, 2007.

Subsequent to March 31, 2007, dividends declared and paid on preferred shares totaled \$485,460 in aggregate for the two outstanding preferred share series through May 8, 2007.

ADDITIONAL INFORMATION (unaudited)

During the period, there have been no material changes in the Trust's investment objective or fundamental policies that have not been approved by the shareowners. There have been no changes in the Trust's charter or By-Laws that would delay or prevent a change in control of the Trust which have not been approved by the shareowners. There have been no changes in the principal risk factors associated with investment in the Trust. Day-to-day management of the Trust's portfolio is the responsibility of David Eurkus. Mr. Eurkus is supported by the fixed income team. Members of this team manage other Pioneer funds investing primarily in fixed income securities. The portfolio manager and the team also may draw upon the research and investment management expertise of Pioneer's affiliate, Pioneer Investment Management Limited. Mr. Eurkus joined Pioneer as a senior vice president in January 2000 and has been an investment professional since 1969.

Notice is hereby given in accordance with Section 23(c) of the Investment Company Act of 1940 that the Trust may purchase, from time to time, its common shares in the open market.

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Pioneer Municipal High Income Advantage Trust

NOTES TO FINANCIAL STATEMENTS 3/31/07

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CEO CERTIFICATION DISCLOSURE (unaudited)

The Trust's Chief Executive Officer has submitted to the New York Stock Exchange the annual CEO certification as required by Section 303A.12(a) of the NYSE Listed Company Manual. In addition, the Trust has filed with the Securities and Exchange Commission the certification of its Chief Executive Officer and Chief Financial Officer required by Section 302 of the Sarbanes-Oxley Act.

IMPORTANT TAX INFORMATION (unaudited)

All of the net investment income distributions paid by Pioneer Municipal High Income Advantage Trust during the taxable year ended March 31, 2007 qualified as tax-exempt interest dividends for federal income tax purposes except the following per share distributions:

	Payable Date	Ordinary Income
Common Shareowners Preferred Shareowners	12/20/2006	\$0.0365
Series A	12/5/2006	\$ 17.31
Series A	12/12/2006	\$ 15.24
Series B	12/11/2006	\$ 17.26
Series B	12/18/2006	\$ 15.00

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Pioneer Municipal High Income Advantage Trust

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Trustees and the Shareowners of Pioneer Municipal High Income Advantage Trust:

We have audited the accompanying statement of assets and liabilities of Pioneer Municipal High Income Advantage Trust (the "Trust"), including the schedule of investments, as of March 31, 2007, and the related statement of operations for the year then ended, the statements of changes in net assets for each of the two years in the period then ended, and the financial highlights for each of the periods indicated therein. These financial statements and financial highlights are the responsibility of the Trust's management. Our responsibility is to express an opinion on these financial statements and financial highlights based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements and financial highlights are free of material misstatement. We were not engaged to perform an audit of the Trust's internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the

effectiveness of the Trust's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements and financial highlights, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our procedures included confirmation of securities owned as of March 31, 2007, by correspondence with the custodian. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements and financial highlights referred to above present fairly, in all material respects, the financial position of Pioneer Municipal High Income Advantage Trust at March 31, 2007, the results of its operations for the year then ended, the changes in its net assets for each of the two years in the period then ended, and the financial highlights for each of the periods indicated therein, in conformity with U.S. generally accepted accounting principles.

/s/ Ernst & Young LLP

Boston, Massachusetts May 15, 2007

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Pioneer Municipal High Income Advantage Trust

RESULTS OF SHAREHOLDER MEETING

On September 21, 2006, Pioneer Municipal High Income Advantage Trust held its annual meeting of shareowners to elect Class III Trustees. All Class III Trustees were elected. Here are the detailed results of the votes.

Proposal 1 - To elect Class III Trustees.

Nominee	Affirmative	Withheld		
Mary K. Bush	21,679,438	352,341		
Thomas J. Perna	21,693,730	338,049		
Marguerite A. Piret+	5,269	37		

+ Elected by Preferred Shares only

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Pioneer Municipal High Income Advantage Trust

FACTORS CONSIDERED BY THE INDEPENDENT TRUSTEES IN APPROVING THE MANAGEMENT CONTRACT

The Investment Company Act of 1940 requires that both the Board of Trustees and a majority of the Independent Trustees (collectively "the Trustees"), voting

separately, annually approve the Trust's management contract (the "Management Contract"). The Trustees have determined that the terms of the Management Contract are fair and reasonable and that renewal of the contract: (i) will enable the Trust to receive quality investment advisory services at a fee deemed reasonable; and (ii) is in the best interests of the Trust and its shareowners. In making such determinations, the Independent Trustees relied upon the assistance of counsel to the Independent Trustees and counsel to the Trust.

Throughout the year, the Independent Trustees regularly met in executive session, separately from the Interested Trustees of the Trust and any officer of Pioneer Investment Management, Inc., the Trust's adviser (the "Investment Adviser"), or its affiliates. While the Trustees, including the Interested Trustees, act on all major matters relating to the Trust, a significant portion of the activities of the Board of Trustees (including certain of those described herein) is conducted through committees, the members of which are comprised exclusively of Independent Trustees. Such committee meetings are attended by officers of the Trust and/or officers of the Investment Adviser to the extent requested by the members of the committee.

In evaluating the Management Contract, the Trustees conducted a review that was specifically focused upon the renewal of the Management Contract, and also relied upon their knowledge, resulting from their meetings throughout the year, of the Investment Adviser, its services and the Trust. Both in meetings specifically dedicated to renewal of the Management Contract and at other meetings during the course of the year, the Trustees, including the Independent Trustees, received materials relating to the Investment Adviser's investment and management services under the Management Contract. These materials included information on (i) the investment performance of the Trust, a peer group of funds as classified by Morningstar, Inc., an independent evaluation service ("Morningstar") and two indices considered appropriate by the Independent Trustees for this purpose, (ii) the general investment outlook in the markets in which the Trust invests, (iii) the procedures employed to determine the value of each of the Trust's assets, (iv) the Investment Adviser's management of the relationships with the Trust's unaffiliated service providers, (v) the record of compliance with the Trust's investment policies

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Pioneer Municipal High Income Advantage Trust

FACTORS CONSIDERED BY THE INDEPENDENT TRUSTEES IN APPROVING THE MANAGEMENT CONTRACT

(continued)

and restrictions and with the Trust's Code of Ethics and the structure and responsibilities of the Investment Adviser's compliance department and (vi) the nature, cost and character of non-investment management services provided by the Investment Adviser and its affiliates, (viii) analyses of the benefits and costs of the use of leverage through the issuance of the Trust's preferred shares and sensitivity analyses based on changes in interest rates and (ix) the

discount or premium of the market price of the Trust's common stock relative to its net asset value and measures that are or could be taken to address any discount.

Specifically in connection with the Independent Trustees' review of the Management Contract, the Independent Trustees requested, and the Investment Adviser provided, additional information in order to evaluate the quality of the Investment Adviser's services and the reasonableness of the fee under the Management Contract. Among other items, this information included data or

analyses of (1) investment performance for one year period for the Trust and a peer group of funds selected on the basis of criteria considered appropriate by the Independent Trustees for this purpose, (2) management and other fees incurred by a peer group of funds selected on the basis of criteria considered appropriate by the Independent Trustees for this purpose, (3) the advisory fees of comparable portfolios of other clients of the Investment Adviser, (4) expense ratios for the Trust and a peer group of funds selected on the basis of criteria considered appropriate by the Independent Trustees for this purpose, (5) the overall organization of the Investment Adviser, (6) the Investment Adviser's financial results and condition, including its and certain of its affiliates' profitability in providing services to the Trust, (7) administrative reimbursements paid to the Investment Adviser or affiliates, (8) investment management staffing, and (9) operating expenses paid by the funds to third parties.

The following summarizes factors considered by the Trustees in connection with reviewing the information described above and their renewal of the Trust's Management Contract. The Trustees did not identify any single factor as all-important or controlling, and the summary does not detail all the matters that were considered.

A. Ancillary Benefits to Shareowners. The Trustees considered the benefits to shareowners of investing in a closed-end fund that is part of an established group of open and closed-end funds. The

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Pioneer Municipal High Income Advantage Trust

Trustees also noted that the relationship of the market price relative to the Trust's net assets attributed to its common shares was at least comparable to other closed-end funds with similar investment approaches.

B. Compliance and Investment Performance. The Trustees determined that the Investment Adviser had policies and systems reasonably designed to achieve compliance with the Trust's investment objective and regulatory requirements. The Trustees also reviewed the Trust's absolute investment performance based upon total return, as well as the Trust's performance relative to estrict the availability of financing on terms and prices acceptable to TDS, whi require TDS to reduce its construction, development or acquisition programs.

Changes in the regulatory environment or a failure by TDS to timely or fully comply with any regulatory requirements could adversely affect TDS' financial condition, results of operations or

Changes in USF funding and/or intercarrier compensation could have a material adverse impact on TDS' financial position or results of operations.

Changes in income tax rates, laws, regulations or rulings, or federal or state tax assessments could have an adverse effect on TDS' financial condition or results of operations.

Settlements, judgments, restraints on its current or future manner of doing business and/or legal costs resulting from pending and future litigation could have an adverse effect on TDS' financial

The possible development of adverse precedent in litigation or conclusions in professional studies to the effect that radio frequency emissions from handsets, wireless data devices and/or cell sites cause harmful health consequences, including cancer or tumors, or may interfere with various electronic medical devices such as pacemakers, could have an adverse effect on TDS' wireless business, financial condition or results of operations.

Certain matters, such as control by the TDS Voting Trust and provisions in the TDS Restated Certificate of Incorporation, may serve to discourage or make more difficult a change in control of TDS.

Any of the foregoing events or other events could cause revenues, customer additions, operating income, capital expenditures and/or any other financial or statistical information to vary from TDS' forward-looking estimates by a material amount.

The foregoing factors are not necessarily all of the important factors that could cause actual results, performance or achievements to differ materially from those expressed in, or implied by, the forward-looking statements contained or incorporated in this document. Other unknown or unpredictable factors also could have material adverse effects on future results, performance or achievements.

PART II. INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the expenses in connection with the issuance and distribution of the securities registered under this registration statement, including this post effective amendment. There will not be any underwriting discounts and commissions. All of the amounts shown include amounts previously paid in connection with the initial registration statement and estimates for amounts to be incurred in connection with this post-effective amendment.

SEC registration fee	\$ 1,486
Legal fees and expenses	70,000
Printing and mailing costs	10,000
Fees of accountants	100,000
Listing Fee and Miscellaneous	13,514

\$195,000

Item 15. Indemnification of Directors and Officers.

The registrant's Restated Certificate of Incorporation, as amended, contains a provision providing that no director or officer of the registrant shall be personally liable to the registrant or its stockholders for monetary damages for breach of fiduciary duty as a director or officer except for breach of the director's or officer's duty of loyalty to the registrant or its stockholders, acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, unlawful payment of dividends, unlawful stock redemptions or repurchases and transactions from which the director or officer derived an improper personal benefit.

The Restated Certificate of Incorporation, as amended, provides that the registrant shall indemnify directors and officers of the registrant, its consolidated subsidiaries and certain other related entities generally in the same manner and to the extent permitted by the Delaware General Corporation Law, as more specifically provided in the Restated Bylaws of the registrant. The Restated Bylaws provide for indemnification and permit the advancement of expenses by the registrant generally in the same manner and to the extent permitted by the Delaware General Corporation Law, subject to compliance with certain requirements and procedures specified in the Restated Bylaws. In general, the Restated Bylaws require that any person seeking indemnification must provide the registrant with sufficient documentation as described in the Restated Bylaws and, if an undertaking to return advances is required, to deliver an undertaking in the form prescribed by the registrant and provide security for such undertaking if considered necessary by the registrant. In addition, the Restated Bylaws specify that, except to the extent required by law, the registrant does not intend to provide indemnification to persons under certain circumstances, such as where the person was not acting in the interests of the registrant or was otherwise involved in a crime or tort against the registrant.

Under the Delaware General Corporation Law, directors and officers, as well as other employees or persons, may be indemnified against judgments, fines and amounts paid in settlement in connection with specified actions, suits or proceedings, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation a "derivative action"), and against expenses (including attorney's fees) in any action (including a derivative action), if they acted in good faith and in a manner they reasonably believed to be in or not opposed to the best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe their conduct was unlawful. However, in the case of a derivative action, a person cannot be indemnified for expenses in respect of any matter as to which the person is adjudged to be liable to the corporation unless and to the extent a court determines that such person is fairly and reasonably entitled to indemnity for such expenses.

Delaware law also provides that, to the extent a director, officer, employee or agent of a corporation has been successful on the merits or otherwise in defense of any action or matter, the corporation must indemnify such party against expenses (including attorneys' fees) actually and reasonably incurred by such party in connection therewith.

Expenses incurred by a director or officer in defending any action may be paid by a Delaware corporation in advance of the final disposition of the action upon receipt of an undertaking by or on behalf of such director or officer to repay such amount if it is ultimately determined that such party is not entitled to be indemnified by the corporation.

The Delaware General Corporation Law provides that the indemnification and advancement of expenses provided thereby are not exclusive of any other rights granted by bylaws, agreements or otherwise, and provides that a corporation shall have the power to purchase and maintain insurance on behalf of any person, whether or not the corporation would have the power to indemnify such person under Delaware law.

The registrant has directors' and officers' liability insurance which provides, subject to certain policy limits, deductible amounts and exclusions, coverage for all persons who have been, are or may in the future be, directors or officers of the registrant, against amounts which such persons must pay resulting from claims against them by reason of their being such directors or officers during the policy period for certain breaches of duty, omissions or other acts done or wrongfully attempted or alleged.

Insofar as indemnification for liabilities arising under the 1933 Act may be permitted to directors, officers or persons controlling the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been informed that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the 1933 Act and therefore unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the 1933 Act and will be governed by the final adjudication of such issue.

Item 16. Exhibits.

Exhibit

The following documents are filed herewith or incorporated herein by reference.

Number 4.1(a)	Description of Document TDS Restated Certificate of Incorporation, as amended, is hereby incorporated by reference to Exhibit 3.1 to TDS' Report on Form 8-A/A filed on July 10, 1998.
4.1(b)	Certificate of Amendment to Restated Certificate of Incorporation is hereby incorporated by reference to Exhibit 3.1 to TDS' Quarterly Report on Form 10-Q for the quarter ended June 30, 2004.
4.1(c)	Certificate of Amendment dated April 11, 2005 to TDS' Restated Certificate of Incorporation, as amended is herby incorporated by reference from Exhibit 3 to TDS' Form 8-A filed on April 11, 2005.
4.2	TDS Restated By-laws as amended, are hereby incorporated by reference to Exhibit 3.1 to TDS' Current Report on Form 8-K dated November 3, 2008.
5	Opinion of Counsel (filed with original Registration Statement on Form S-3)
23.1	Consent of Independent Registered Public Accounting Firm PricewaterhouseCoopers LLP
23.2	Consent of Independent Registered Public Accounting Firm Deloitte & Touche LLP
23.3	Consent of Counsel (contained in Exhibit 5 to original filing of this Registration Statement No. 333-125001)
24	Powers of Attorney (included on Signature Page to this Post-Effective Amendment No. 4 to this Registration Statement)
99.1	Telephone and Data Systems, Inc. Special Common Share Automatic Dividend Reinvestment and Stock Purchase Plan (included in the Prospectus which is a part of this Post-Effective Amendment)

Item 17. Undertakings.

- (a) The undersigned registrant hereby undertakes:
 - (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.
- (5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
 - (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
 - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of an undersigned registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.
- (b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of any employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

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SIGNATURES

Pursuant to requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Chicago, State of Illinois on the 5th day of November, 2008.

TELEPHONE AND DATA SYSTEMS, INC.

By /s/ LEROY T. CARLSON, JR.

LeRoy T. Carlson, Jr., President and Chief Executive Officer (Principal Executive Officer)

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints LeRoy T. Carlson, Jr. as his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution for him and in his name, place and stead, in any and all capacities to sign any and all amendments (including post-effective amendments) to this Registration Statement and/or any filings pursuant to Rule 462(b) or 462(e) under the Securities Act, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and to take such actions in, and file with, the appropriate applications, statements, consents and other documents as may be necessary or expedient to register any securities of the Registrant for sale, granting unto said attorney-in-fact and agent full power and authority to do so and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all the said attorney-in-fact and agent or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof and the Registrant hereby confers like authority on its behalf.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed below by the following persons in the capacities indicated on the 5th day of November, 2008.

Signature	Title
/s/ LEROY T. CARLSON, JR.	Director and President and Chief Executive
LeRoy T. Carlson, Jr.	Officer (Principal Executive Officer)
/s/ KENNETH R. MEYERS	Director and Executive Vice President and Chief Financial Officer (Principal Financial Officer)
Kenneth R. Meyers	
/s/ WALTER C.D. CARLSON	Director and Chairman of the Board
Walter C.D. Carlson	
/s/ JAMES BARR III	Director
James Barr III	

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TO SPECIAL COMMON SHARE DIVIDEND REINVESTMENT PLAN
POST-EFFECTIVE AMENDMENT NO. 4 TO FORM S-1 ON FORM S-3 REGISTRATION STATEMENT

/s/ LETITIA G. CARLSON, M.D.	Director
Letitia G. Carlson, M.D.	
/s/ PRUDENCE E. CARLSON	Director
Prudence E. Carlson	
/s/ GREGORY P. JOSEFOWICZ	Director
Gregory P. Josefowicz	
/s/ DONALD C. NEBERGALL	Director
Donald C. Nebergall	
/s/ GEORGE W. OFF	Director
George W. Off	
/s/ CHRISTOPHER D. O'LEARY	Director
Christopher D. O'Leary	
/s/ MITCHELL H. SARANOW	Director
Mitchell H. Saranow	
/s/ HERBERT S. WANDER	Director
Herbert S. Wander	
/s/ DOUGLAS D. SHUMA	Senior Vice President and Corporate Controller (Principal Accounting Officer)
Douglas D. Shuma	PAGE 2 OF 2 SIGNATURE PAGES

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TO SPECIAL COMMON SHARE DIVIDEND REINVESTMENT PLAN
POST-EFFECTIVE AMENDMENT NO. 4 TO FORM S-1 ON FORM S-3 REGISTRATION STATEMENT

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SIGNATURES

POWER OF ATTORNEY