

PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST
Form N-Q
February 28, 2008

OMB APPROVAL
OMB Number: 3235-0578
Expires: April 30, 2010
Estimated average burden
hours per response.....
10.5

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

FORM N-Q

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: December 31, 2007

Form N-Q is to be used by management investment companies, other than small business investment companies registered on Form N-5 (239.24 and 274.5 of this chapter), to file reports with the Commission, not later than 60 days after close of the first and third fiscal quarters, pursuant to Rule 30b1-5 under the Investment Company Act of 1940 (17 CFR 270.30b-5). The Commission may use the information provided on Form N-Q in its regulatory, disclosure review, inspection, and policymaking roles.

A registrant is required to disclose the information specified by Form N-Q, and the Commission will make this information public. A registrant is not required to respond to the collection of information contained in Form N-Q 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.

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST - Form N-Q

ITEM 1. Schedule of Investments.

Pioneer Municipal High Income Advantage Trust
SCHEDULE OF INVESTMENTS 12/31/07 (unaudited)

| Principal Amount (\$) | | Value |
|---|--|--------------|
| TAX-EXEMPT OBLIGATIONS - 137.8% of Net Assets | | |
| Alaska - 1.3% | | |
| 3,875,000 | (a) Alaska State Housing Finance Corp., RIB, 9.78%, | \$ 4,190,076 |
| Arizona - 4.2% | | |
| 5,000,000 | Casa Grande Industrial Development Authority, H | \$ 5,324,250 |
| 3,000,000 | (a) Downtown Phoenix Hotel Corp., RIB, 6.253%, 7/1/ | 3,054,870 |
| 1,000,000 | Pima County Industrial Development Authority, 6 | 1,018,090 |
| 1,551,000 | Pima County Industrial Development Authority, 6 | 1,593,621 |
| 1,000,000+ | Pima County Industrial Development Authority, 7 | 1,209,410 |
| 2,000,000 | San Luis Facility Development Corp., 7.25%, 5/1 | 1,911,480 |
| | \$ | 14,111,721 |
| California - 7.7% | | |
| 2,680,000+ | Golden State Tobacco Securitization Corp., 6.75 | \$ 3,097,973 |
| 5,000,000 | San Jose California Airport Revenue, 5.0%, 3/1/ | 5,163,000 |
| 9,520,000 | (a) University of California, RIB, 6.601%, 5/15/38 | 10,525,788 |
| 9,015,000 | Valley Health System Hospital Revenue, 6.875%, | 6,882,051 |
| | \$ | 25,668,812 |
| Colorado - 2.1% | | |
| 2,850,000+ | Denver Health & Hospital Authority Healthcare R | \$ 3,129,357 |
| 3,520,000+ | Northwest Parkway Public Highway Authority, 7.1 | 3,969,539 |
| | \$ | 7,098,896 |
| District of Columbia - 2.1% | | |
| 2,700,000 | District of Columbia Tobacco Settlement Financi | \$ 2,743,605 |
| 4,000,000 | District of Columbia Tobacco Settlement Financi | 4,085,800 |
| | \$ | 6,829,405 |
| Florida - 5.9% | | |
| 1,000,000 | Greater Orlando Aviation Authority, 6.5%, 11/15 | \$ 942,970 |
| 4,500,000 | Hillsborough County Florida Industrial Development Authority | |
| Pollution | Control Revenue, 5.5%, 10/1/23 | 4,565,250 |
| 1,980,000 | Hillsborough County Florida Industrial Development Authority | |
| Pollution | Control Revenue, 6.75%, 7/1/29 | 1,983,663 |
| 500,000 | Miami Beach Health Facilities Authority, 5.375% | 447,995 |
| 1,500,000 | Miami Beach Health Facilities Authority, 6.7%, | 1,547,475 |
| 10,000,000 | Miami-Dade County Aviation Revenue, 5.0%, 10/1/ | 10,148,000 |
| | \$ | 19,635,353 |
| Georgia - 2.1% | | |
| 4,000,000 | (a) Atlanta Georgia Water and Wastewater Revenue, R | \$ 4,319,320 |
| 1,065,000 | Effingham County Industrial Development Authori | 1,027,746 |
| 1,650,000 | Savannah Georgia Economic Development Authority | 1,683,842 |
| | \$ | 7,030,908 |
| Guam - 2.5% | | |
| 3,000,000 | Northern Mariana Islands, 5.0%, 6/1/30 | \$ 2,680,200 |
| 4,600,000+ | Northern Mariana Islands, 6.75%, 10/1/33 | 5,368,660 |
| 400,000 | Northern Mariana Islands, 6.75%, 10/1/33 | 422,504 |
| | \$ | 8,471,364 |
| Idaho - 2.4% | | |
| 2,000,000 | Power County Industrial Development Corp., 6.45 | \$ 2,043,460 |
| 5,920,000 | Power County Pollution Control Revenue, 5.625% | 5,994,592 |

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST - Form N-Q

| | | | |
|--------------|---|----|------------|
| | | \$ | 8,038,052 |
| | Illinois - 5.8% | | |
| 4,000,000 | Centerpoint Intermodal Center, 8.0%, 6/15/23 (1 | \$ | 3,870,040 |
| 1,100,000 | Illinois Finance Authority Revenue, 5.5%, 5/15/ | | 1,001,583 |
| 1,850,000 | Illinois Finance Authority Revenue, 5.75%, 5/15 | | 1,679,393 |
| 1,000,000 | Illinois Finance Authority Revenue, 6.0%, 11/15 | | 956,360 |
| 3,000,000 | Illinois Finance Authority Revenue, 6.0%, 11/15 | | 2,814,270 |
| 1,645,000 | Illinois Health Facilities Authority Revenue, 5 | | 1,545,165 |
| 1,265,000 | Illinois Health Facilities Authority Revenue, 6 | | 1,265,721 |
| 2,400,000 | Illinois Health Facilities Authority Revenue, 6 | | 2,401,368 |
| 1,500,000 | Illinois Health Facilities Authority Revenue, 6 | | 1,321,095 |
| 2,700,000 | Southwestern Illinois Development Authority Rev | | 2,576,178 |
| | | \$ | 19,431,173 |
| | Indiana - 4.9% | | |
| 10,000,000 | Indiana State Development Finance Authority Rev | \$ | 10,072,600 |
| 5,000,000 | Jasper County Industrial Economic Development R | | 4,330,150 |
| 2,170,000 | Vincennes Industrial Economic Development Reven | | 2,070,744 |
| | | \$ | 16,473,494 |
| | Kentucky - 1.4% | | |
| 500,000 | Kentucky Economic Development Finance Authority | \$ | 496,320 |
| 4,400,000 | Kentucky Economic Development Finance Authority | | 4,252,292 |
| | | \$ | 4,748,612 |
| | Louisiana - 2.9% | | |
| 750,000 | Opelousas Louisiana General Hospital Authority | \$ | 774,023 |
| 9,415,000 | Tobacco Settlement Financing Corp., 5.875%, 5/1 | | 9,043,578 |
| | | \$ | 9,817,601 |
| | Maryland - 0.5% | | |
| 710,000 | Maryland Health & Higher Educational Facilities | \$ | 633,490 |
| 1,250,000 | Maryland Health & Higher Educational Facilities | | 1,084,125 |
| | | \$ | 1,717,615 |
| | Massachusetts - 7.3% | | |
| 5,000,000 | Massachusetts Bay Transportation Authority Reve | \$ | 5,618,600 |
| 2,195,000 | Massachusetts Health & Educational Facilities A | | 2,090,123 |
| 1,000,000+ | Massachusetts Health & Educational Facilities A | | 1,133,030 |
| 3,520,000(a) | Massachusetts State College Building Authority | | 3,867,389 |
| 900,000 | Massachusetts State Development Finance Agency, | | 853,146 |
| 2,920,000 | Massachusetts State Development Finance Agency, | | 2,878,770 |
| 4,625,000 | Massachusetts State Development Finance Agency, | | 4,688,039 |
| 3,335,000(a) | Massachusetts State Housing Finance Agency, RIB | | 3,342,003 |
| | | \$ | 24,471,100 |
| | Michigan - 3.7% | | |
| 1,650,000 | Crescent Academy Project Full Term Certificates | \$ | 1,445,054 |
| 1,500,000+ | Delta County Michigan Economic Development Corp | | 1,673,625 |
| 3,000,000 | Macomb County Hospital Finance Authority Revenu | | 2,942,940 |
| 4,130,000 | Michigan State Hospital Finance Authority Reven | | 3,754,583 |
| 1,000,000 | Michigan State Strategic Fund Solid Waste Dispo | | 1,009,540 |
| 1,470,000 | Star International Academy Full Term Certificat | | 1,407,584 |
| 3,405,000 | Wayne Charter County Special Airport Facilities | | - |
| | | \$ | 12,233,326 |
| | Missouri - 2.9% | | |
| 1,850,000 | Kansas City Industrial Development Authority Re | \$ | 1,738,852 |
| 1,500,000 | St. Louis Industrial Development Authority Reve | | 1,484,100 |
| 6,640,000 | St. Louis Industrial Development Authority Reve | | 6,544,318 |
| | | \$ | 9,767,270 |
| | Montana - 0.7% | | |
| 2,445,000(b) | Hardin Increment Industrial Infrastructure Deve | \$ | 1,657,808 |
| 1,000,000 | Two Rivers Authority, Inc., Project Revenue, 7. | | 790,830 |
| | | \$ | 2,448,638 |
| | Nevada - 1.4% | | |
| 2,425,000 | Clark County Industrial Development Revenue, 5. | \$ | 2,183,810 |
| 1,600,000 | Nevada State Department of Business & Industry, | | 1,513,152 |

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST - Form N-Q

| | | |
|---------------|---|---------------|
| 1,000,000 | Nevada State Department of Business & Industry, | 937,640 |
| 70,000 | Nevada State Department of Business & Industry, | 64,548 |
| | | \$ 4,699,150 |
| | New Hampshire - 1.5% | |
| 1,000,000 | New Hampshire Health & Educational Facilities A | \$ 896,500 |
| 1,125,000 | New Hampshire Health & Educational Facilities A | 1,119,758 |
| 3,000,000+ | New Hampshire Higher Educational & Health Facil | 3,060,000 |
| | | \$ 5,076,258 |
| | New Jersey - 9.4% | |
| 2,500,000 | Burlington County New Jersey Bridge Commission | \$ 2,305,275 |
| 13,000,000 | New Jersey Economic Development Authority Reven | 12,151,360 |
| 2,500,000 | New Jersey Health Care Facilities Financing Aut | 2,424,125 |
| 2,495,000 (a) | New Jersey State Turnpike Authority, RIB, 9.521 | 3,774,062 |
| 1,000,000+ | Tobacco Settlement Financing Corp., 6.25%, 6/1/ | 1,137,860 |
| 3,250,000+ | Tobacco Settlement Financing Corp., 6.75%, 6/1/ | 3,777,735 |
| 5,000,000+ | Tobacco Settlement Financing Corp., 7.0%, 6/1/4 | 5,870,500 |
| | | \$ 31,440,917 |
| | New York - 11.1% | |
| 3,000,000 | Dutchess County Industrial Development Agency R | \$ 3,181,680 |
| 5,000,000 | Nassau County New York Industrial Development A | 5,018,450 |
| 1,000,000 | Nassau County New York Industrial Development A | 1,000,000 |
| 6,980,000 | New York City Industrial Development Agency, 5. | 5,812,735 |
| 2,000,000 | New York City Industrial Development Agency, 5. | 1,933,800 |
| 2,000,000 | New York City Industrial Development Agency, 6. | 2,001,500 |
| 3,950,000 | New York City Industrial Development Agency, 7. | 4,149,277 |
| 2,400,000 | New York City Industrial Development Agency, 7. | 2,405,424 |
| 5,000,000 | New York State Environmental Facilities Corp., | 5,148,900 |
| 4,500,000 | Suffolk County New York Industrial Development | 3,792,915 |
| 500,000 | Ulster County New York Industrial Development A | 468,475 |
| 2,000,000 | Yonkers Industrial Development Agency Civic Fac | 1,995,340 |
| | | \$ 36,908,496 |
| | North Carolina - 5.2% | |
| 11,350,000 | Charlotte North Carolina Special Facilities Rev | \$ 10,144,743 |
| 7,140,000 | Charlotte North Carolina Special Facilities Rev | 7,336,921 |
| | | \$ 17,481,664 |
| | Ohio - 2.2% | |
| 3,800,000 | Belmont County Health System Revenue, 5.7%, 1/1 | \$ 3,762,646 |
| 1,000,000 | Belmont County Health System Revenue, 5.8%, 1/1 | 954,050 |
| 3,000,000 | Cleveland Airport Special Revenue, 5.375%, 9/15 | 2,601,300 |
| | | \$ 7,317,996 |
| | Oklahoma - 1.7% | |
| 1,875,000 | Jackson County Memorial Hospital Authority Reve | \$ 1,883,588 |
| 2,220,000 | Tulsa Municipal Airport Transportation Revenue, | 2,149,204 |
| 1,500,000 | Tulsa Municipal Airport Transportation Revenue, | 1,500,840 |
| | | \$ 5,533,632 |
| | Pennsylvania - 8.8% | |
| 3,000,000+ | Allegheny County Hospital Development Authority | \$ 3,539,280 |
| 500,000 + | Allegheny County Hospital Development Authority | 589,880 |
| 1,000,000 | Clarion County Hospital Authority Revenue, 5.62 | 1,001,250 |
| 3,600,000 | Columbia County Hospital Authority Revenue, 5.8 | 3,207,204 |
| 3,110,000 (c) | Delaware County Industrial Development Authorit | 2,352,124 |
| 1,155,000 | Hazleton Health Services Authority Hospital Rev | 1,161,803 |
| 3,360,000 | Montgomery County Higher Education & Health Aut | 3,393,667 |
| 1,430,000 | Pennsylvania Economic Development Financing Aut | 1,375,774 |
| 1,805,000 | Pennsylvania Economic Development Financing Aut | 1,796,047 |
| 2,330,000 | Pennsylvania Economic Development Financing Aut | 2,316,276 |
| 5,000,000 | Philadelphia Hospitals & Higher Education Facil | 4,425,000 |
| 2,005,000 | Scranton-Lackawanna Health & Welfare Authority | 2,015,807 |
| 2,245,000 | Scranton-Lackawanna Health & Welfare Authority | 2,257,101 |
| | | \$ 29,431,213 |
| | Rhode Island - 3.9% | |
| 4,485,000 | Central Falls Rhode Island Detention Facilities | \$ 4,800,699 |

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST - Form N-Q

| | | |
|--------------|---|----------------|
| 8,285,000 | Tobacco Settlement Financing Corp., 6.25%, 6/1/ | 8,306,541 |
| | \$ | 13,107,240 |
| | South Carolina - 5.9% | |
| 1,500,000 | Connector 2000 Association, Inc., Toll Road Rev | \$ 1,213,560 |
| 1,600,000 | Loris Community Hospital District, 5.625%, 1/1/ | 1,601,520 |
| 7,140,000+ | South Carolina Jobs Economic Development Author | 8,199,933 |
| 860,000 + | South Carolina Jobs Economic Development Author | 985,319 |
| 3,000,000+ | South Carolina Jobs Economic Development Author | 3,430,950 |
| 4,400,000 | Tobacco Settlement Revenue Management, 6.375%, | 4,407,392 |
| | \$ | 19,838,674 |
| | Tennessee - 2.5% | |
| 1,000,000+ | Johnson City Health & Educational Facilities Bo | \$ 1,193,660 |
| 7,000,000 | Knox County Health Educational & Housing Facili | 7,152,600 |
| | \$ | 8,346,260 |
| | Texas - 14.9% | |
| 8,650,000 | Brazos River Authority Pollution Control Revenu | \$ 8,313,861 |
| 4,000,000 | Brazos River Authority Pollution Control Revenu | 4,137,080 |
| 7,350,000 | Gulf Coast Industrial Development Authority, 7. | 7,055,485 |
| 10,000,000 | Houston Texas Airport System Special Facilities | 10,103,900 |
| 1,000,000 | IAH Public Facility Corp., Project Revenue Bond | 973,110 |
| 1,000,000 | IAH Public Facility Corp., Project Revenue Bond | 952,330 |
| 1,350,000 | IAH Public Facility Corp., Project Revenue Bond | 1,268,595 |
| 845,000 | Lubbock Health Facilities Development Corp., 6. | 847,374 |
| 2,000,000 | Lubbock Health Facilities Development Corp., 6. | 2,010,480 |
| 7,750,000 | Matagorda County Navigation District Number 1 R | 7,576,167 |
| 5,000,000 | Tomball Hospital Authority, 6.0%, 7/1/25 | 5,069,100 |
| 1,500,000(d) | Willacy County Local Government Corp., 6.0%, 3/ | 1,527,195 |
| | \$ | 49,834,677 |
| | Utah - 0.5% | |
| 1,600,000 | Spanish Fork Charter School Revenue, 5.7%, 11/1 | \$ 1,485,696 |
| | Washington - 7.0% | |
| 5,500,000 | Port Seattle Washington Special Facilities Reve | \$ 5,617,590 |
| 1,345,000 | Tobacco Settlement Authority Revenue, 6.5%, 6/1 | 1,388,780 |
| 6,960,000(a) | Washington State Economic Development Finance A | 7,689,965 |
| 2,000,000 | Washington State Health Care Facilities Authori | 1,953,120 |
| 2,000,000 | Washington State Health Care Facilities Authori | 1,952,800 |
| 5,000,000 | Washington State Housing Finance Commission Non | 4,692,250 |
| | \$ | 23,294,505 |
| | Wisconsin - 1.4% | |
| 3,000,000 | Aztalan Wisconsin Exempt Facilities Revenue, 7. | \$ 2,715,690 |
| 1,000,000 | Wisconsin State Health & Educational Facilities | 1,003,740 |
| 1,000,000 | Wisconsin State Health & Educational Facilities | 964,930 |
| | \$ | 4,684,360 |
| | TOTAL TAX-EXEMPT OBLIGATIONS | |
| | (Cost \$439,847,066) | \$ 460,664,154 |
| | MUNICIPAL COLLATERALIZED DEBT OBLIGATION - 3.8% of Net Assets | |
| 13,000,000 | Non-Profit Preferred Funding Trust I, Series E, | \$ 12,637,690 |
| | TOTAL MUNICIPAL COLLATERALIZED DEBT OBLIGATION | |
| | (Cost \$13,000,000) | \$ 12,637,690 |
| Shares | COMMON STOCK - 0.3% of Net Assets | |
| 80,678 | Northwest Airlines Corp. | \$ 1,170,638 |
| | TOTAL COMMON STOCK | |
| | (Cost \$3,210,349) | \$ 1,170,638 |
| | TAX-EXEMPT MONEY MARKET | |
| | MUTUAL FUND - 0.0% of Net Assets | |

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST - Form N-Q

| | | | |
|--------|--|----|---------------|
| 45,820 | BlackRock Liquidity Funds MuniFund Portfolio | \$ | 45,820 |
| | TOTAL TAX-EXEMPT MONEY MARKET MUTUAL FUND (Cost \$45,820) | \$ | 45,820 |
| | TOTAL INVESTMENTS IN SECURITIES - 141.9% (Cost \$456,103,235) (e) (f) | \$ | 474,518,302 |
| | OTHER ASSETS AND LIABILITIES - 3.0% | \$ | 9,824,103 |
| | PREFERRED SHARES AT REDEMPTION VALUE, INCLUDING DIVIDENDS PAYABLE - (44.9)% | \$ | (150,009,450) |
| | NET ASSETS APPLICABLE TO COMMON SHAREOWNERS - 100.0% | \$ | 334,332,955 |

(144A) Security is exempt from registration under Rule 144A of the Securities Act of 1933. Such securities may be resold normally to qualified institutional buyers in a transaction exempt from registration. At December 31, 2007, the value of these securities amounted to \$47,390,455, or 14.2% of total net assets applicable to common shareowners.

RIB Residual Interest Bonds.

+ Prerefunded bonds have been collateralized by U.S. Treasury or U.S. Government Agency securities 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.

(a) The interest rate is subject to change periodically and inversely based upon prevailing market rates. The interest rate shown is the rate at December 31, 2007.

(b) Debt obligation initially issued at one coupon which converts to a higher coupon at a specific date. The rate shown is the rate at December 31, 2007.

(c) Security is in default and is non-income producing.

(d) Escrow to maturity.

(e) The concentration of investments by type of obligation/market sector is as follows:

| | |
|---------------------------|--------|
| Insured | 12.5% |
| General Obligation | 5.3 |
| Revenue Bonds: | |
| Health Revenue | 26.6 |
| Development Revenue | 11.3 |
| Airport Revenue | 10.3 |
| Tobacco Revenue | 9.3 |
| Facilities Revenue | 6.7 |
| Transportation Revenue | 6.1 |
| Pollution Control Revenue | 6.1 |
| Housing Revenue | 1.7 |
| Other Revenue | 1.4 |
| Education Revenue | 1.3 |
| Water Revenue | 1.1 |
| Power Revenue | 0.3 |
| | 100.0% |

(f) At December 31, 2007, the net unrealized gain on

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST - Form N-Q

investments based on cost for federal income tax purposes of \$452,460,201 was as follows:

| | | |
|---|----|--------------|
| Aggregate gross unrealized gain for all investments in which there is an excess of value over tax c | \$ | 32,158,575 |
| Aggregate gross unrealized loss for all investments in which there is an excess of tax cost over va | | (10,100,474) |
| Net unrealized gain | \$ | 22,058,101 |

For financial reporting purposes net unrealized gain on investments was \$18,415,067 and cost of investments aggregated \$456,103,235.

ITEM 2. CONTROLS AND PROCEDURES.

(a) Disclose the conclusions of the registrant's principal executive officer or officers and principal financial officer or officers, or persons performing similar functions, about the effectiveness of the registrant's disclosure controls and procedures (as defined in Rule 30a-3(c) under the Act (17 CFR 270.30a-3(c))) as of a date within 90 days of the filing date of the report that includes the disclosure required by this paragraph, based on their evaluation of these controls and procedures required by Rule 30a-3(b) under the Act (17 CFR 270.30a-3(b)) and Rule 13a-15(b) or 15d-15(b) under the Exchange Act (17 CFR 240.13a-15(b) or 240.15d-15(b)).

The registrant's principal executive officer and principal financial officer have concluded that the registrant's disclosure controls and procedures are effective based on their evaluation of these controls and procedures as of a date within 90 days of the filing date of this report.

(b) Disclose any change in the registrant's internal controls over financial reporting (as defined in Rule 30a-3(d) under the Act (17 CFR 270.30a-3(d))) that occurred during the registrant's last fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

There were no significant changes in the registrant's internal control over financial reporting that occurred during the second fiscal quarter of the period covered by this report that have materially affected, or are reasonably likely to materially affect, the registrant's internal control over financial reporting.

ITEM 3. EXHIBITS.

(a) A separate certification for each principal executive officer and principal financial officer of the registrant as required by Rule 30a-2 under the Act (17 CFR 270.30a-2).

Filed herewith.

SIGNATURES

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST - Form N-Q

[See General Instruction F]

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

(Registrant) Pioneer Municipal High Income Advantage Trust

By (Signature and Title)* /s/ John F. Cogan, Jr.
John F. Cogan, Jr, President

Date February 29, 2008

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

By (Signature and Title)* /s/ John F. Cogan, Jr.
John F. Cogan, Jr., President

Date February 29, 2008

By (Signature and Title)* /s/ Vincent Nave
Vincent Nave, Treasurer

Date February 29, 2008

* Print the name and title of each signing officer under his or her signature.