

PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST
Form N-Q
August 26, 2011

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

FORM N-Q

QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS
OF REGISTERED MANAGEMENT INVESTMENT COMPANY

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: June 30, 2011

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 270.30b1-5). 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.

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<PAGE>

ITEM 1. Schedule of Investments.

Pioneer Municipal High Income Advantage Trust SCHEDULE OF INVESTMENTS 6/30/11 (unaudited)			
Principal Amount	S&P/ Moody's Ratings (unaudited)		Value
TAX-EXEMPT OBLIGATIONS - 147.4% of Net Assets			
		Alabama - 0.6%	
\$ 2,500,000	NR/NR	Huntsville-Redstone Village Special Care Facilities Financing Authority, 5.5%, 1/1/43	\$ 1,789,100
		Arizona - 3.3%	
5,000,000	NR/NR	Casa Grande Industrial Development Authority Hospital Revenue, 7.625%, 12/1/29	\$ 4,657,600
1,492,000	NR/Baa3	Pima County Industrial Development Authority, 6.75%, 7/1/31	1,413,103
2,640,000	NR/NR	Pima County Industrial Development Authority, 7.0%, 1/1/38	2,407,574
1,000,000	NR/NR	San Luis Facility Development Corp., 7.25%, 5/1/27	900,130
			\$ 9,378,407
		California - 12.8%	
1,000,000	NR/NR	California Enterprise Development Authority Recovery Zone Facility Revenue, 8.5%, 4/1/31	\$ 1,022,420
3,140,000(a)	AA+/WR	California State University Revenue, RIB, 12.808%, 11/1/39 (144A)	3,029,755
2,425,000	A-/A1	California State Various Purpose, 5.75%, 4/1/31	2,588,639
8,575,000(a)	AA+/NR	California State Various Purpose, RIB, 12.808%, 6/1/37 (144A)	8,018,482
3,000,000	BB+/NR	California Statewide Communities Development Authority, 7.25%, 10/14/38 (144A)	3,030,600
803,175(b)	NR/NR	California Statewide Communities Development Authority, 9.0%, 12/1/38	44,978
2,680,000 †	AAA/Aaa	Golden State Tobacco Securitization Corp., 6.75%, 6/1/39	2,999,724
1,500,000	A-/NR	Madera Irrigation Financing Authority Water Revenue, 6.25%, 1/1/31	1,530,690
1,500,000	A-/NR	Madera Irrigation Financing Authority Water Revenue, 6.5%, 1/1/40	1,530,375
2,500,000	A/A2	San Jose California Airport Revenue, 5.0%, 3/1/37	2,342,025
10,500,000(a)	AA+/NR	University of California, RIB, 13.36%, 5/15/38	10,019,940
			\$ 36,157,628
		Colorado - 1.4%	
2,850,000 †	NR/WR	Denver Health & Hospital Authority Healthcare Revenue, 6.0%, 12/1/31	\$ 2,917,659

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1,000,000	NR/NR	Kremmling Memorial Hospital District, 7.125%, 12/1/45	971,240
		Connecticut - 3.0%	\$ 3,888,899
7,750,000	BBB/Baa1	Connecticut State Development Authority Revenue, 5.75%, 11/1/37	\$ 7,494,405
1,000,000	NR/NR	Hamden Connecticut Facility Revenue, 7.75%, 1/1/43	1,026,230
		District of Columbia - 3.3%	\$ 8,520,635
2,700,000	BBB/Baa3	District of Columbia Tobacco Settlement Financing Corp., 6.5%, 5/15/33	\$ 2,747,277
6,825,000	BBB/Baa3	District of Columbia Tobacco Settlement Financing Corp., 6.75%, 5/15/40	6,613,971
		Florida - 3.9%	\$ 9,361,248
1,000,000	NR/NR	Florida Development Finance Corp. Educational Facilities Revenue, 6.0%, 9/15/40	\$ 877,280
2,000,000	NR/NR	Florida Development Finance Corp. Educational Facilities Revenue, 7.625%, 6/15/41	1,956,600
2,000,000	BBB+/Baa1	Hillsborough County Industrial Development Authority Pollution Control Revenue, 5.5%, 10/1/23	2,032,240
1,980,000	NR/NR	Hillsborough County Industrial Development Authority Revenue, 6.75%, 7/1/29	1,806,988
1,000,000 †	NR/WR	Hillsborough County Industrial Development Authority Revenue, 8.0%, 8/15/32	1,396,080
500,000	NR/NR	Miami Beach Health Facilities Authority, 5.375%, 11/15/28	437,515
2,500,000	A-/A2	Miami-Dade County Florida Aviation Revenue, 5.5%, 10/1/41	2,505,025
		Georgia - 4.5%	\$ 11,011,728
5,210,000(a)	NR/Aa3	Atlanta Georgia Water and Wastewater Revenue, RIB, 12.808%, 11/1/43 (144A)	\$ 4,928,764
1,000,000	CCC+/NR	Clayton County Development Authority Special Facilities Revenue, 9.0%, 6/1/35	1,074,140
900,000	NR/NR	DeKalb County Georgia Hospital Authority Revenue, 6.0%, 9/1/30	891,828
750,000	NR/NR	DeKalb County Georgia Hospital Authority Revenue, 6.125%, 9/1/40	719,010
1,065,000	NR/Ba2	Effingham County Industrial Development Authority, 6.5%, 6/1/31	1,065,895
3,360,000	NR/NR	Fulton County Residential Care Facilities, 7.0%, 7/1/29	2,556,288
1,650,000	NR/NR	Savannah Georgia Economic Development Authority Revenue, 7.4%, 1/1/34	1,580,502
		Guam - 2.1%	\$ 12,816,427
1,000,000	B/NR	Guam Government of Department Education Certificates of Participation, 6.625%, 12/1/30	\$ 982,480
4,400,000 †	AAA/NR	Northern Mariana Islands, 6.75%, 10/1/33	4,998,136
		Idaho - 1.2%	\$ 5,980,616
2,000,000	BBB+/Baa1		\$ 2,001,220

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		Power County Industrial Development Corp., 6.45%, 8/1/32	
1,500,000	BBB+/Baa1	Power County Pollution Control Revenue, 5.625%, 10/1/14	1,503,750
			\$ 3,504,970
		Illinois - 8.3%	
\$ 3,000,000(c)	NR/NR	Centerpoint Intermodal Center, 8.5%, 6/15/23 (144A)	\$ 3,000,420
2,000,000	NR/Caa2	City of Chicago Illinois, 5.5%, 12/1/30	1,528,340
1,450,000	A+/A1	Illinois Finance Authority Revenue, 5.5%, 4/1/39	1,394,059
2,000,000	AA+/Aa3	Illinois Finance Authority Revenue, 6.0%, 8/15/25	2,081,360
1,000,000	NR/NR	Illinois Finance Authority Revenue, 6.0%, 11/15/27	599,400
2,000,000	AA+/Aa2	Illinois Finance Authority Revenue, 6.0%, 8/15/39	2,123,840
2,500,000	NR/NR	Illinois Finance Authority Revenue, 6.125%, 11/15/25	2,204,850
6,000,000	NR/NR	Illinois Finance Authority Revenue, 8.25%, 5/15/45	5,788,020
2,500,000	NR/NR	Illinois Finance Authority Revenue, 8.25%, 2/15/46	2,420,725
1,500,000(b)	NR/NR	Illinois Health Facilities Authority Revenue, 6.9%, 11/15/33	524,850
2,415,000	NR/NR	Southwestern Illinois Development Authority Revenue, 5.625%, 11/1/26	1,822,021
			\$ 23,487,885
		Indiana - 5.9%	
250,000	NR/Baa3	East Chicago Indiana Exempt Facilities Revenue, 7.0%, 1/1/14	\$ 241,047
10,000,000	BBB-/WR	Indiana State Development Finance Authority Revenue, 5.75%, 10/1/11	10,027,900
5,000,000	NR/Ba2	Jasper County Industrial Economic Development Revenue, 5.6%, 4/1/29	4,704,900
1,900,000	NR/NR	Vincennes Industrial Economic Development Revenue, 6.25%, 1/1/24	1,646,996
			\$ 16,620,843
		Kansas - 0.3%	
1,000,000	NR/A2	Kansas Development Finance Authority, 5.0%, 5/15/35	\$ 941,510
		Kentucky - 1.4%	
4,390,000	BB-/NR	Kentucky Economic Development Finance Authority Hospital System Revenue, 5.875%, 10/1/22	