

PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST
Form N-Q
August 28, 2013

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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, 2013

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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ITEM 1. Schedule of Investments.

Pioneer Municipal High

Income Advantage Trust

| June 30, 2013

Ticker Symbol: MAV

Principal Amount USD (\$)	S&P/Moody's Rating (unaudited)	Value
	TAX EXEMPT OBLIGATIONS - 146.8% of Net Assets	
	Alabama - 1.6%	
2,500,000	NR/B2 Alabama Industrial Development Authority Solid Waste Disposal Revenue, 6.45%, 12/1/23	\$ 2,510,550
2,500,000	NR/NRHuntsville-Redstone Village Special Care Facilities Financing Authority Nursing Home Revenue, 5.5%, 1/1/43	2,176,550
		\$ 4,687,100
	Arizona - 3.4%	
5,000,000	NR/NRCasa Grande Industrial Development Authority Hospital Revenue, 7.625%, 12/1/29	\$ 5,155,250
1,477,000	NR/Baa3Pima County Industrial Development Authority, 6.75%, 7/1/31	1,477,237

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2,640,000	NR/NRPima County Industrial Development Authority, 7.0%, 1/1/38	2,646,019
1,000,000	NR/NRSan Luis Facility Development Corp., 7.25%, 5/1/27	823,200
	California - 14.3%	\$ 10,101,706
6,990,000	CCC/NRCalifornia County Tobacco Securitization Agency Revenue, 5.25%, 6/1/46	\$ 5,013,577
1,550,000	NR/NRCalifornia Enterprise Development Authority Recovery Zone Facility Revenue, 8.5%, 4/1/31	1,708,038
5,000,000	NR/Baa3California Pollution Control Financing Authority, 5.0%, 7/1/37	4,870,400
2,425,000	A/A1California State General Obligation Various Purpose, 5.75%, 4/1/31	2,672,617
1,875,000	NR/NRCalifornia Statewide Communities Development Authority, 5.875%, 11/1/43	1,648,950
757,342(a)	NR/NRCalifornia Statewide Communities Development Authority Environmental Facilities Revenue, 9.0%, 12/1/38	6,665
4,000,000	BB/NRCalifornia Statewide Communities Development Authority Revenue Higher Education Revenue, 7.25%, 10/1/38 (144A)	3,973,680
20,000,000(b)	NR/NRInland Empire Tobacco Securitization Authority, 0.0%, 6/1/36	3,155,800
3,140,000	AA-/WRLehman Municipal Trust Receipts Revenue, RIB, 13.124%, 9/20/28 (144A)	3,572,378
8,575,000(c)	AA-/NRLehman Municipal Trust Receipts, General Obligation, 13.031%, 7/28/31	9,534,885
1,500,000	A-/NRMadera Irrigation Financing Authority Water Revenue, 6.25%, 1/1/31	1,636,965
1,500,000	A-/NRMadera Irrigation Financing Authority Water Revenue, 6.5%, 1/1/40	1,659,615
2,500,000	A-/A2San Jose California Airport Revenue, RIB, 5.0%, 3/1/37	2,540,050

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	Lee County Industrial Development Authority, 5.375%, 6/15/37	
2,500,000	A/A2Miami-Dade County Florida Aviation Revenue, 5.5%, 10/1/41	2,648,825 \$ 16,140,881
	Georgia - 4.3%	
5,210,000	AA-/WRAtlanta Georgia Water and Wastewater Revenue, RIB, 12.845%, 11/1/43 (144A)	\$ 5,348,378
1,000,000	B/NRClayton County Development Authority Revenue, 9.0%, 6/1/35	1,085,890
900,000	NR/NRDeKalb County Georgia Hospital Authority Revenue, 6.0%, 9/1/30	956,412
750,000	NR/NRDeKalb County Georgia Hospital Authority Revenue, 6.125%, 9/1/40	792,570
3,360,000	NR/NRFulton County Residential Care Facilities for the Elderly Authority, 7.0%, 7/1/29	2,820,619
1,650,000	NR/NRSavannah Georgia Economic Development Authority Revenue, 7.4%, 1/1/34	1,663,612 \$ 12,667,481
	Guam - 1.9%	
1,000,000	B/NRGuam Government of Department Education Certificates of Participation, 6.625%, 12/1/30	\$ 1,041,960
4,400,000(d)	AA+/B2Northern Mariana Islands, 6.75%, 10/1/33	4,470,268 \$ 5,512,228
	Idaho - 1.2%	
2,000,000	A-/Baa1Power County Industrial Development Corp., Revenue, 6.45%, 8/1/32	\$ 2,002,080
1,500,000	A-/Baa1Power County Pollution Control Revenue, 5.625%, 10/1/14	1,500,525 \$ 3,502,605
	Illinois - 6.9%	
1,000,000	NR/Baa1City of Country Club Hills, General Obligation, 5.0%, 12/1/31	\$ 1,006,990
–	NR/NRIllinois Finance Authority Revenue, 0.0%, 11/15/52	42,026
417,400(c)	NR/NRIllinois Finance Authority Revenue, 4.0%, 11/15/52	284,583
1,450,000	A+/A1	1,510,045

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Principal Amount USD (\$)	S&P/Moody's Rating (unaudited)	Value
	Illinois Finance Authority Revenue, 5.5%, 4/1/39	
1,605,000	AA-/A3 Illinois Finance Authority Revenue, 6.0%, 8/15/25	1,661,095
280,000	BBB+/NR Illinois Finance Authority Revenue, 6.0%, 8/15/38	298,379
2,000,000	AA+/Aa2 Illinois Finance Authority Revenue, 6.0%, 8/15/39	2,272,460
2,500,000	NR/NR Illinois Finance Authority Revenue, 6.125%, 11/15/25	2,518,700
45,000	NR/NR Illinois Finance Authority Revenue, 7.0%, 11/15/17	44,282
–	165,000 NR/NR Illinois Finance Authority Revenue, 7.0%, 11/15/27	156,702
6,000,000	NR/NR Illinois Finance Authority Revenue, 8.25%, 5/15/45	6,104,220
	Illinois - (continued)	
2,500,000	NR/NR Illinois Finance Authority Revenue, 8.25%, 2/15/46	2,552,475
2,135,000	NR/NR Southwestern Illinois Development Authority Revenue, 5.625%, 11/1/26	1,714,042
		\$ 20,165,999
	Indiana - 1.0%	
250,000	NR/NR City of Carmel Indiana Nursing Home Revenue, 7.0%, 11/15/32	\$ 264,042
750,000	NR/NR City of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/42	788,370
500,000	NR/NR City of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/47	522,000
250,000	NR/Baa3 East Chicago Indiana Exempt Facilities Revenue, 7.0%, 1/1/14	249,830
1,700,000	NR/NR Vincennes Industrial Economic Development Revenue, 6.25%, 1/1/24	1,008,729
		\$ 2,832,971
	Kansas - 0.3%	
1,000,000	NR/A2 Kansas Development Finance Authority Revenue, 5.0%, 5/15/35	\$ 1,023,980
	Louisiana - 6.8%	
7,000,000	BBB-/Baa3	\$ 7,504,700

	Jefferson Parish Hospital Service Revenue, 6.375%, 7/1/41	
2,500,000	BBB-/Baa3 Louisiana Local Government Environmental Facilities & Community Development Authority Revenue, 6.75%, 11/1/32	2,674,975