

PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST

Form N-Q

February 26, 2014

OMB APPROVAL

OMB Number: 3235-0578
Expires: January 31, 2016
Estimated average burden
hours per response.....
10.5

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 811-21823

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)

Terrence J. Cullen, 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, 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.

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

<PAGE>

ITEM 1. Schedule of Investments.

File the schedules as of the close of the reporting period as set forth in ss. 210.12-12 12-14 of Regulation S-X [17 CFR 210.12-12 12-14]. The schedules need not be audited.

Pioneer Municipal High

Income Advantage Trust

| December 31, 2013

Ticker Symbol: MAV

Principal Amount USD (\$)	S&P/Moody's Ratings	Value
	TAX EXEMPT OBLIGATIONS - 150.8% of Net Assets	
	Alabama - 1.7%	
2,500,000	NR/B2Alabama Industrial Development Authority Solid Waste Disposal Revenue, 6.45%, 12/1/23	\$ 2,498,925
2,500,000	NR/NRHuntsville-Redstone Village Special Care Facilities Financing Authority Nursing Home Revenue, 5.5%, 1/1/43	1,990,675
		\$ 4,489,600
	Arizona - 2.8%	
5,000,000	NR/NRCasa Grande Industrial Development Authority	\$ 4,072,600

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

	Hospital Revenue, 7.625%, 12/1/29	
2,640,000	NR/NRPima County Industrial Development Authority, 7.0%, 1/1/38	2,574,211
32,000	NR/Baa3Pima County Industrial Development Authority Education Revenue, 6.75%, 7/1/31	31,405
1,000,000	NR/NRSan Luis Facility Development Corp., 7.25%, 5/1/27	749,550
		\$ 7,427,766
6,990,000	California - 16.0% CCC/NRCalifornia County Tobacco Securitization Agency Revenue, 5.25%, 6/1/46	\$ 4,688,962
1,550,000	NR/NRCalifornia Enterprise Development Authority Recovery Zone Facility Revenue, 8.5%, 4/1/31	1,660,189
5,000,000	NR/Baa3California Pollution Control Financing Authority, 5.0%, 7/1/37	4,555,900
3,000,000	BB+/NRCalifornia School Finance Authority, 7.375%, 10/1/43	3,059,940
2,425,000	A/A1California State General Obligation Various Purpose, 5.75%, 4/1/31	2,690,586
1,875,000	NR/NRCalifornia Statewide Communities Development Authority, 5.875%, 11/1/43	1,620,469
757,342(a)	NR/NRCalifornia Statewide Communities Development Authority Environmental Facilities Revenue, 9.0%, 12/1/38	6,574
4,000,000	B+/NRCalifornia Statewide Communities Development Authority Revenue Higher Education Revenue, 7.25%, 10/1/38 (144A)	3,519,360
20,000,000(b)	NR/NRInland Empire Tobacco Securitization Authority Revenue, 0.0%, 6/1/36	3,200,400
3,140,000(c)	AA-/WRLehman Municipal Trust Receipts Revenue, RIB, 11.07%, 9/20/28 (144A)	3,367,870
8,575,000(c)	AA-/NRLehman Municipal Trust Receipts, General Obligation, 13.06%, 7/28/31	9,166,846

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

1,500,000	A-/NR	Madera Irrigation Financing Authority Water Revenue, 6.25%, 1/1/31	1,613,850
1,500,000	A-/NR	Madera Irrigation Financing Authority Water Revenue, 6.5%, 1/1/40	1,623,465
2,500,000	A-/A2	San Jose California Airport Revenue, RIB, 5.0%, 3/1/37	2,486,250
		Colorado - 0.9%	\$ 43,260,661
1,500,000	B+/NR	Colorado Educational & Cultural Facilities Authority, 8.0%, 9/1/43	\$ 1,463,265
1,000,000	NR/NR	Kremmling Memorial Hospital District Certificate of Participation, 7.125%, 12/1/45	1,012,230
		Connecticut - 0.4%	\$ 2,475,495
1,000,000	NR/NR	Hamden Connecticut Facility Revenue, 7.75%, 1/1/43	\$ 1,010,940
		District of Colombia - 3.5%	
2,700,000	BBB/Baa1	District of Columbia Tobacco Settlement Financing Corp., 6.5%, 5/15/33	\$ 2,788,803
Principal Amount USD (\$)	S&P/Moody's Ratings		Value
		District of Colombia - (continued)	
6,825,000	BBB/Baa1	District of Columbia Tobacco Settlement Financing Corp., 6.75%, 5/15/40	\$ 6,790,534
		Florida - 3.6%	\$ 9,579,337
1,500,000	NR/NR	Alachua County Health Facilities Authority Revenue, 8.125%, 11/15/41	\$ 1,616,595
1,500,000	NR/NR	Alachua County Health Facilities Authority Revenue, 8.125%, 11/15/46	1,612,605
500,000	NR/B1	Capital Trust Agency Revenue Bonds, 7.75%, 1/1/41	527,815
1,000,000(d)	NR/WR	Hillsborough County Industrial Development Authority Revenue, 8.0%, 8/15/32	1,349,380
2,200,000	BB/NR		2,002,330

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

	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	2,588,100 \$ 9,696,825
	Georgia - 7.9%	
5,210,000(c)	AA-/WRAtlanta Georgia Water and Wastewater Revenue, RIB, 12.827%, 11/1/43 (144A)	\$ 5,222,139
5,000,000	B+/NRClayton County Development Authority Revenue, 9.0%, 6/1/35	5,283,950
900,000	NR/NRDeKalb County Georgia Hospital Authority Revenue, 6.0%, 9/1/30	900,891
750,000	NR/NRDeKalb County Georgia Hospital Authority Revenue, 6.125%, 9/1/40	738,548
3,360,000	NR/NRFulton County Residential Care Facilities for the Elderly Authority, 7.0%, 7/1/29	2,699,424
2,000,000	NR/NRFulton County Residential Care Facilities Revenue, 5.125%, 7/1/42	1,569,700
3,100,000	AA/Aa2Private Colleges & Universities Authority, 5.0%, 10/1/43	3,250,970
1,650,000	NR/NRSavannah Georgia Economic Development Authority Revenue, 7.4%, 1/1/34	1,683,330 \$ 21,348,952
	Guam - 0.4%	
1,000,000	B+/NRGuam Government of Department Education Certificates of Participation, 6.625%, 12/1/30	\$ 1,027,640
	Idaho - 1.3%	
2,000,000	A-/Baa1Power County Industrial Development Corp., Revenue, 6.45%, 8/1/32	\$ 2,001,560
1,500,000	A-/Baa1Power County Pollution Control Revenue, 5.625%, 10/1/14	1,500,045 \$ 3,501,605
	Illinois - 6.9%	
1,000,000	NR/Baa1City of Country Club Hills, General Obligation, 5.0%, 12/1/31	\$ 1,000,180

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

365,400(b)	NR/NR	Illinois Finance Authority Revenue, 0.0%, 11/15/52	37,536
417,400(c)	NR/NR	Illinois Finance Authority Revenue, 4.0%, 11/15/52	211,271
1,450,000	A+/A1	Illinois Finance Authority Revenue, 5.5%, 4/1/39	1,473,620
1,605,000	AA-/A3	Illinois Finance Authority Revenue, 6.0%, 8/15/25	1,642,525
280,000	BBB+/NR	Illinois Finance Authority Revenue, 6.0%, 8/15/38	287,174
2,000,000	AA+/Aa2	Illinois Finance Authority Revenue, 6.0%, 8/15/39	2,222,780
2,500,000	NR/NR	Illinois Finance Authority Revenue, 6.125%, 11/15/25	2,444,200
45,000	NR/NR	Illinois Finance Authority Revenue, 7.0%, 11/15/17	43,182
160,000	NR/NR	Illinois Finance Authority Revenue, 7.0%, 11/15/27	142,139
6,000,000	NR/NR	Illinois Finance Authority Revenue, 8.25%, 5/15/45	5,142,780
2,500,000	NR/NR	Illinois Finance Authority Revenue, 8.25%, 2/15/46	2,402,825

Principal Amount USD (\$)	S&P/Moody's Ratings	Value
---------------------------------	------------------------	-------

		Illinois - (continued)	
2,025,000	NR/NR	Southwestern Illinois Development Authority Revenue, 5.625%, 11/1/26	\$ 1,575,409 \$ 18,625,621
		Indiana - 1.0%	
250,000	NR/NR	City of Carmel Indiana Nursing Home Revenue, 7.0%, 11/15/32	\$ 246,372
750,000	NR/NR	City of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/42	733,403
500,000	NR/NR	City of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/47	485,355
250,000	NR/Baa3	East Chicago Indiana Exempt Facilities Revenue, 7.0%, 1/1/14	250,000
1,585,000	NR/NR	Vincennes Industrial Economic s Revenue, 6.25%, 1/1/24	927,273 \$ 2,642,403
		Kansas - 0.4%	
1,000,000	NR/A2		\$ 1,003,210

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

		Kansas Development Finance Authority Revenue, 5.0%, 5/15/35	
		Louisiana - 6.1%	
7,000,000	BB+/Baa3	Jefferson Parish Hospital Service District No. 2, 6.375%, 7/1/41	\$ 7,169,400
2,500,000	BBB/Baa3	Louisiana Local Government Environmental Facilities & Community Development Authority Revenue, 6.75%, 11/1/32	2,645,325
6,000,000	NR/Baa1	Louisiana Public Facilities Authority Revenue, 5.5%, 5/15/47	5,969,220
750,000	BBB-/NR	Opelousas Louisiana General Hospital Authority Revenue, 5.75%, 10/1/23	