

PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST
Form N-Q
February 26, 2016

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 811-21409

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)

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, 2015

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

NQ | December 31, 2015

Ticker Symbol: MAV

Schedule of Investments | 12/31/15 (unaudited)

Principal Amount USD (\$)	Value
TAX EXEMPT OBLIGATIONS - 139.0% of Net Assets (a)	
Alabama - 1.7%	
2,500,000 Alabama Industrial Development Authority, Pine City Fiber Co., 6.45%, 12/1/23	\$ 2,510,500
2,500,000 Huntsville-Redstone Village Special Care Facilities Financing Authority, Redstone Village Project, 5.5%, 1/1/43	2,508,425
	\$ 5,018,925
Arizona - 0.9%	
32,000 County of Pima, AZ, Industrial Development Authority, Arizona Charter Schools Project, Series C, 6.75%, 7/1/31	\$ 32,213
2,640,000(b) County of Pima, AZ, Industrial Development Authority, Constellation Schools Project, 7.0%, 1/1/38	2,692,800

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

	\$ 2,725,013
California - 16.7%	
6,990,000 California County Tobacco Securitization Agency, Asset-Backed, Gold County Funding Corp., 5.25%, 6/1/46	\$ 5,805,544
38,610,000(c) California County Tobacco Securitization Agency, Capital Appreciaton, Stanislaus County, Subordinated, Series A, 6/1/46	4,457,911
1,845,000 California Educational Facilities Authority, Stanford University, 5.25%, 4/1/40	2,521,488
1,550,000 California Enterprise Development Authority, Sunpower Corp., 8.5%, 4/1/31	1,770,642
5,000,000 California Pollution Control Financing Authority, 5.0%, 7/1/37 (144A)	5,197,400
3,000,000 California School Finance Authority, Classical Academies Project, Series A, 7.375%, 10/1/43	3,561,300
1,875,000 California Statewide Communities Development Authority, Lancer Plaza Project, 5.875%, 11/1/43	1,936,556
757,342(d) California Statewide Communities Development Authority, Microgy Holdings Project, 9.0%, 12/1/38	8
1,500,000(b) City of Madera, CA, Irrigation Financing Authority, 6.25%, 1/1/31	1,798,890
1,500,000(b) City of Madera, CA, Irrigation Financing Authority, 6.5%, 1/1/40	1,813,500
2,500,000 City of San Jose, CA, Series B, 5.0%, 3/1/37	2,593,625
8,575,000(e)(f) Lehman Municipal Trust Receipts, RIB, 13.142%, 7/28/31	9,989,189
3,140,000(e) Lehman Municipal Trust Receipts, RIB, 13.235%, 9/20/28 (144A)	3,924,215
1,000,000 River Islands Public Financing Authority, Community Facilities, 5.5%, 9/1/45	1,063,960
2,425,000(f) State of California, Various Purposes, 5.75%, 4/1/31	2,792,387
465,000 Tobacco Securitization Authority of Southern California, Series A-1, 5.125%, 6/1/46	422,397
	\$ 49,649,012
Colorado - 0.5%	
1,500,000 Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43	\$ 1,586,700
Connecticut - 3.0%	
7,200,000(f) State of Connecticut, Series E, 4.0%, 9/1/30	\$ 7,820,136
1,000,000 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43	1,044,840
	\$ 8,864,976
District of Columbia - 3.4%	
2,700,000 District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.5%, 5/15/33	\$ 3,338,469
6,825,000 District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.75%, 5/15/40	6,826,297

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

\$ 10,164,766

Florida - 4.5%	
1,500,000 Alachua County Health Facilities Authority, Terraces Bonita Springs Project, Series A, 8.125%, 11/15/41	\$ 1,779,030
1,500,000 Alachua County Health Facilities Authority, Terraces Bonita Springs Project, Series A, 8.125%, 11/15/46	1,775,445
500,000 Capital Trust Agency, Inc., Million Air One LLC, 7.75%, 1/1/41	451,290
2,500,000 County of Miami-Dade, FL, Aviation Revenue, Series B, 5.5%, 10/1/41	2,808,250
5,000,000 Florida's Turnpike Enterprise, Department of Transportation, Series A, 4.0%, 7/1/32	5,392,150
1,000,000(b) Hillsborough County Industrial Development Authority, Various Health Facilities, 8.0%, 8/15/32	1,250,610

\$ 13,456,775

Georgia - 4.0%	
900,000 DeKalb County Georgia Hospital Authority, DeKalb Medical Center, Inc. Project, 6.0%, 9/1/30	\$ 991,980
750,000 DeKalb County Georgia Hospital Authority, DeKalb Medical Center, Inc. Project, 6.125%, 9/1/40	820,635

Principal
Amount
USD (\$)

Value

Georgia - (continued)	
8,750,000 Private Colleges & Universities Authority, Emory University, Series A, 5.0%, 10/1/43	\$ 10,089,013
	\$ 11,901,628
Guam - 0.4%	
1,000,000 Guam Department of Education, Certificates of Participation, John F. Kennedy High School, Series A, 6.625%, 12/1/30	\$ 1,091,830
Idaho - 0.7%	
2,000,000 Power County Industrial Development Corp., FMC Corp. Project, 6.45%, 8/1/32	\$ 2,004,080
Illinois - 4.3%	
1,000,000(f) City of Country Club Hills, IL, Sales Tax, 5.0%, 12/1/31	\$ 1,006,180
417,400(e) Illinois Finance Authority, Clare Oaks Project, Series B, 4.0%, 11/15/52	282,789
261,000(c) Illinois Finance Authority, Clare Oaks Project, Series C-1, 11/15/52	9,367
52,200(c)	14,245

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

Illinois Finance Authority, Clare Oaks Project, Series C-2, 11/15/52	
52,200(c) Illinois Finance Authority, Clare Oaks Project, Series C-3, 11/15/52	8,966
3,000,000 Illinois Finance Authority, Greenfields of Geneva Project, Series A, 8.125%, 2/15/40	3,003,900
2,500,000 Illinois Finance Authority, Greenfields of Geneva Project, Series A, 8.25%, 2/15/46	2,503,225
1,450,000 Illinois Finance Authority, Memorial Health System, 5.5%, 4/1/39	1,588,243
2,000,000 Illinois Finance Authority, Northwestern Memorial Hospital, Series A, 6.0%, 8/15/39	2,323,020
280,000 Illinois Finance Authority, Swedish Covenant, Series A, 6.0%, 8/15/38	311,758
1,705,000 Southwestern Illinois Development Authority, Village of Sauget Project, 5.625%, 11/1/26	1,586,451
	\$ 12,638,144
Indiana - 0.6%	
250,000 City of Carmel, IN, Barrington Carmel Project, Series A, 7.0%, 11/15/32	\$ 280,765
750,000 City of Carmel, IN, Barrington Carmel Project, Series A, 7.125%, 11/15/42	843,060
500,000 City of Carmel, IN, Barrington Carmel Project, Series A, 7.125%, 11/15/47	560,495
	\$ 1,684,320
Kansas - 0.4%	
1,000,000 Kansas Development Finance Authority, Hayes Medical Center, Inc., Series Q, 5.0%, 5/15/35	\$ 1,080,000
Louisiana - 6.0%	
7,000,000 Jefferson Parish Hospital Service District No. 2, East Jefferson General Hospital, 6.375%, 7/1/41	\$ 7,983,570
2,500,000 Louisiana Local Government Environmental Facilities & Community Development Authority, Westlake Chemical Corp. Project, 6.75%, 11/1/32	2,708,850
- 1,650,000(b) Louisiana Public Facilities Authority, Ochsner Clinic Foundation Project, Series A, 5.5%, 5/15/47	1,756,870
- 4,350,000 Louisiana Public Facilities Authority, Ochsner Clinic Foundation Project, Series A, 5.5%, 5/15/47	4,546,664

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

750,000	Opelousas Louisiana General Hospital Authority, Opelousas General Health System Project, 5.75%, 10/1/23	752,738
		\$ 17,748,692
	Maine - 2.0%	
1,500,000	Maine Health & Higher Educational Facilities Authority, Maine General Medical Center, 7.5%, 7/1/32	\$ 1,796,160
3,500,000	Maine Turnpike Authority, Series A, 5.0%, 7/1/42	4,037,285
		\$ 5,833,445
	Maryland - 3.7%	
2,000,000	Maryland Health & Higher Educational Facilities Authority, Charlestown Community, 6.25%, 1/1/45	\$ 2,234,740
2,235,000	Maryland Health & Higher Educational Facilities Authority, City Neighbors, Series A, 6.75%, 7/1/44	2,437,044
1,250,000	Maryland Health & Higher Educational Facilities Authority, Doctor's Community Hospital, 5.75%, 7/1/38	1,324,750
4,500,000	Maryland Health & Higher Educational Facilities Authority, Maryland University Medical System, Series A, 5.0%, 7/1/43	4,966,425
		\$ 10,962,959
	Massachusetts - 5.7%	
987,904	Massachusetts Development Finance Agency, Linden Ponds, Inc., Series A-1, 5.5%, 11/15/46	\$ 847,641
Principal Amount USD (\$)		
	Massachusetts - (continued)	
2,200,000	Massachusetts Development Finance Agency, Partner's Healthcare System, Series M-4, 5.0%, 7/1/39	2,471,546
8,000,000	Massachusetts Development Finance Agency, WGBH Foundation, Series A, 5.75%, 1/1/42	10,164,720
2,400,000	Massachusetts Health & Educational Facilities Authority, Massachusetts Institute of Technology, Series K, 5.5%, 7/1/32	3,330,960
3,420,000(d)		8,379

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

Massachusetts Health & Educational Facilities Authority, Quincy Medical Center, Series A, 6.5%, 1/15/38		\$ 16,823,246
Michigan - 3.6%		
2,000,000 Flint Michigan Hospital Building Authority, Hurley Medical Center, 7.375%, 7/1/35		\$ 2,284,320
2,235,000 Kent Hospital Finance Authority, Metropolitan Hospital Project, Series A, 6.25%, 7/1/40		2,236,676
560,000 Michigan Public Educational Facilities Authority, Crescent Academy, 7.0%, 10/1/36		578,654
5,000,000 Michigan State University, Series A, 5.0%, 8/15/41		5,702,250
		\$ 10,801,900
Minnesota - 0.8%		
2,000,000 Bloomington Port Authority, Radisson Blu Mall of America, 9.0%, 12/1/35		\$ 2,294,960
Montana - 0.3%		
2,445,000 City of Hardin, MT, Tax Allocation, Rocky Mountain Power, Inc. Project, 6.25%, 9/1/31		\$ 855,652
1,000,000(d)Two Rivers Authority, Inc., 7.375%, 11/1/27		144,020
		\$ 999,672
Nevada - 2.3%		
4,500,000(b)City of Reno, NV, Renown Regional Medical Center Project, Series A, 5.25%, 6/1/41		\$ 4,778,415
2,000,000 County of Washoe, NV, Fuel Tax, 5.0%, 2/1/43		2,189,020
		\$ 6,967,435
New Jersey - 9.4%		
7,500,000 New Jersey Economic Development Authority, Continental Airlines, 5.75%, 9/15/27		\$ 8,306,625
3,300,000 New Jersey Health Care Facilities Financing Authority, Raritan Bay Medical Center, 7.25%, 7/1/27		3,304,752
3,500,000(e) New Jersey State Turnpike Authority, RIB, 13.867%, 7/1/23 (144A)		6,139,280
15,375,000(c)New Jersey Transportation Trust Fund Authority, 12/15/27		10,228,526

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

	\$ 27,979,183
New York - 6.8%	
5,000,000 New York State Dormitory Authority, Columbia University, 5.0%, 10/1/41	\$ 5,812,300
2,000,000 New York State Dormitory Authority, Orange Medical Center, 6.125%, 12/1/29	2,182,300
7,500,000 New York State Dormitory Authority, Series C, 5.0%, 3/15/39	8,648,400
1,500,000 New York State Dormitory Authority, Trustees of Columbia University, 5.0%, 10/1/45	2,051,130
1,379,463 Westchester County Healthcare Corp., Series A, 5.0%, 11/1/44	1,534,997
	\$ 20,229,127
Ohio - 6.7%	
3,000,000 Akron Bath Copley Joint Township Hospital District, Akron General Health System, 5.0%, 1/1/31	\$ 3,253,470
2,500,000 Buckeye Tobacco Settlement Financing Authority, Asset-Backed, Series A-2, 5.875%, 6/1/47	2,160,025
8,945,000 Buckeye Tobacco Settlement Financing Authority, Asset-Backed, Series A-2, 6.5%, 6/1/47	8,308,653
3,000,000 Ohio State Water Development Authority, First Energy Generation Project, Series A, 3.0%, 5/15/19	3,050,130
2,500,000(f) State of Ohio, Common Schools, Series B, 5.0%, 6/15/29	2,978,175
	\$ 19,750,453
Oregon - 0.7%	
2,000,000 Oregon State Facilities Authority, Samaritan Health Services, Series A, 5.25%, 10/1/40	\$ 2,163,660
Pennsylvania - 9.5%	
1,965,000 Pennsylvania Economic Development Financing Authority, US Airways Group, Series B, 8.0%, 5/1/29	\$ 2,314,927
5,000,000 Pennsylvania Economic Development Financing Authority, USG Corp. Project, 6.0%, 6/1/31	5,000,500
5,000,000 Pennsylvania Turnpike Commission, Series D, 5.3%, 12/1/41	5,571,050
500,000 Philadelphia Authority for Industrial Development, Greater Philadelphia Health Action, Inc. Project, Series A,	502,915

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

6.625%, 6/1/50

Principal
Amount
USD (\$)

Pennsylvania - (continued)	
6,000,000	Philadelphia Authority for Industrial Development, Nueva Esperanze, Inc., 8.2%, 12/1/43
	\$ 6,666,720
1,000,000	Philadelphia Authority for Industrial Development, Performing Arts Charter School Project, 6.5%, 6/15/33 (144A)
	1,067,850
2,000,000	Philadelphia Authority for Industrial Development, Performing Arts Charter School Project, 6.75%, 6/15/43 (144A)
	2,143,140
5,000,000	Philadelphia Hospitals & Higher Education Facilities Authority, Temple University Health System, Series A, 5.0%, 7/1/34
	5,076,450
	\$ 28,343,552
Puerto Rico - 1.1%	
4,500,000(f)	Commonwealth of Puerto Rico, Series A, 8.0%, 7/1/35
	\$ 3,262,635
Rhode Island - 0.7%	
1,355,000(d)	Central Falls Detention Facility Corp., 7.25%, 7/15/35
	\$ 337,422
1,500,000	Rhode Island Health & Educational Building Corp., Tockwatten Home Issue, 8.375%, 1/1/46
	1,775,355
	\$ 2,112,777
South Carolina - 2.1%	
4,400,000(g)	Tobacco Settlement Revenue Management Authority, Series B, 6.375%, 5/15/30
	\$ 6,100,820
South Dakota - 1.4%	
4,000,000	South Dakota Health & Educational Facilities Authority, Sanford Health, Series B, 4.0%, 11/1/44
	\$ 4,074,440
Tennessee - 3.0%	
5,000,000	Johnson City Health & Educational Facilities Board, Mountain States Health Alliance, 6.5%, 7/1/38
	\$ 5,770,250
3,000,000	Sullivan County Health, Educational & Housing Facilities Board, Wellmont Health System Project, Series C, 5.25%, 9/1/36
	3,074,880

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

	\$ 8,845,130
Texas - 19.1%	
1,000,000 Arlington Higher Education Finance Corp., Universal Academy, Series A, 7.0%, 3/1/34	\$ 1,059,740
1,500,000 Arlington Higher Education Finance Corp., Universal Academy, Series A, 7.125%, 3/1/44	1,587,690
2,500,000 Central Texas Regional Mobility Authority, Sub Lien, 6.75%, 1/1/41	2,980,925
2,500,000(f) County of Harris TX, Series A, 5.0%, 10/1/26	3,111,175
5,000,000(f) Goose Creek Consolidated Independent School District, Series C, 4.0%, 2/15/26	5,666,500
2,663,453(d) Gulf Coast Industrial Development Authority, Microgy Holdings Project, 7.0%, 12/1/36	27
3,000,000 Houston Higher Education Finance Corp., St. John's School Project, Series A, 5.0%, 9/1/38	3,256,080
2,000,000 Lubbock Health Facilities Development Corp., Carillon Project, Series A, 6.625%, 7/1/36	2,037,180
3,355,000 North Texas Tollway Authority, Series A, 5.0%, 1/1/30	3,947,359
9,750,000(b) North Texas Tollway Authority, Series F, 5.75%, 1/1/33	10,658,700
1,500,000 Red River Health Facilities Development Corp., MRC Crestview, Series A, 8.0%, 11/15/41	1,751,325
2,000,000(f) Richardson Independent School District, School Building, 5.0%, 2/15/38	2,311,600
3,960,000 Sanger Industrial Development Corp., Texas Pellets Project, Series B, 8.0%, 7/1/38	4,273,909
1,000,000 Tarrant County Cultural Education Facilities Finance Corp., Mirador Project, Series A, 8.125%, 11/15/39	856,650
750,000 Tarrant County Cultural Education Facilities Finance Corp., Mirador Project, Series A, 8.25%, 11/15/44	642,555
1,000,000(d) Texas Midwest Public Facility Corp., Secure Treatment Facility Project, 9.0%, 10/1/30	119,500
3,000,000 Texas Private Activity Bond Surface Transportation Corp., NTE Mobility Partners LLC, 7.0%, 12/31/38	3,762,480
2,500,000	2,796,250

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

Travis County Health Facilities Development Corp., Longhorn Village Project, 7.125%, 1/1/46		
5,000,000(f) Tyler Independent School District, School Building, 5.0%, 2/15/38	5,779,000	
		\$ 56,598,645
Virginia - 3.5%		
2,000,000 County of Washington, VA, Industrial Development Authority, Mountain States Health Alliance, Series C, 7.75%, 7/1/38	\$ 2,284,840	
3,000,000 Tobacco Settlement Financing Corp., Series B-1, 5.0%, 6/1/47	2,343,990	
5,000,000 Virginia Public School Authority Revenue, 4.0%, 8/1/25	5,770,150	
		\$ 10,398,980
Washington - 5.2%		
2,500,000 University of Washington, Series B, 5.0%, 6/1/29	\$ 3,054,725	
Principal Amount USD (\$)		Value
Washington - (continued)		
1,500,000(b) Washington State Health Care Facilities Authority, Kadlec Regional Medical Center, 5.5%, 12/1/39		\$ 1,798,965
2,000,000 Washington State Health Care Facilities Authority, VA Mason Medical, Series A, 6.125%, 8/15/37		2,141,640
2,000,000 Washington State Health Care Facilities Authority, VA Mason Medical, Series A, 6.25%, 8/15/42		2,141,940
1,100,000 Washington State Housing Finance Commission, Mirabella Project, Series A, 6.75%, 10/1/47		1,199,209
5,000,000 Washington State Housing Finance Commission, Skyline at First Hill Project, Series A, 5.625%, 1/1/27		5,022,400
		\$ 15,358,879
West Virginia - 0.7%		
2,000,000(d) City of Philippi, WV, Alderson-Broadus College, Inc., Series A, 7.75%, 10/1/44		\$ 1,200,080
725,000 West Virginia Hospital Finance Authority, Highland Hospital Group, 9.125%, 10/1/41		784,341

	\$ 1,984,421
Wisconsin - 3.6%	
5,000,000 Public Finance Authority, Glenridge Palmer Ranch, Series A, 8.25%, 6/1/46	\$ 6,258,000
750,000 Public Finance Authority, Roseman University Health Sciences Project, 5.875%, 4/1/45	771,750
1,500,000 Public Finance Authority, SearStone CCRC Project, Series A, 8.625%, 6/1/47	1,788,885
195,000 Public Finance Authority, SearStone CCRC Project, Series B, 8.375%, 6/1/20	195,667
1,500,000(b) Wisconsin Health & Educational Facilities Authority, Pro Healthcare, Inc. Group, 6.625%, 2/15/39	1,755,165
	\$ 10,769,467
TOTAL TAX EXEMPT OBLIGATIONS	
(Cost \$376,415,178)	\$ 412,270,647
MUNICIPAL COLLATERALIZED DEBT OBLIGATION - 0.2% of Net Assets	
13,000,000(e) Non-Profit Preferred Funding Trust I, Series E, 0.0%, 9/15/37 (144A)	\$ 715,130
TOTAL MUNICIPAL COLLATERALIZED DEBT OBLIGATION	
(Cost \$13,000,000)	\$ 715,130
TAX EXEMPT MONEY MARKET MUTUAL FUND - 5.4% of Net Assets	
16,000,000 BlackRock Liquidity Funds MuniFund Portfolio	\$ 16,000,000
TOTAL TAX EXEMPT MONEY MARKET MUTUAL FUND	
(Cost \$16,000,000)	\$ 16,000,000
TOTAL INVESTMENTS IN SECURITIES - 144.6%	
(Cost - \$405,415,178) (h)	\$ 428,985,777

OTHER ASSETS AND LIABILITIES - 6.0%	\$ 17,722,430
PREFERRED SHARES AT REDEMPTION VALUE, INCLUDING DIVIDENDS PAYABLE - (50.6)%	\$ (150,006,713)
NET ASSETS APPLICABLE TO COMMON SHAREOWNERS -100.0%	\$ 296,701,494

(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, 2015, the value of these securities amounted to \$19,187,015, or 6.5% of total net assets applicable to common shareowners.

RIB Residual Interest Bond. 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, 2015.

- (a) Consists of Revenue Bonds unless otherwise indicated.
- (b) 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.
- (c) Security issued with a zero coupon. Income is recognized through accretion of discount.
- (d) Security is in default.
- (e) The interest rate is subject to change periodically. The interest rate shown is the rate at December 31, 2015.
- (f) Represents a General Obligation Bond.
- (g) Escrow to maturity.

(h) At December 31, 2015, the net unrealized appreciation on investments based on cost for federal tax purposes of \$399,746,877 was as follows:

Aggregate gross unrealized appreciation for all investments in which there is an excess of value over tax cost	\$ 45,643,030
Aggregate gross unrealized depreciation for all investments in which there is an excess of tax cost over value	(16,404,130)
Net unrealized appreciation	\$ 29,238,900

For financial reporting purposes net unrealized appreciation on investments was \$23,570,599 and cost of investments aggregated \$405,415,178.

Various inputs are used in determining the value of the Trust's investments. These inputs are summarized in the three broad levels below.

Level 1 - quoted prices in active markets for identical securities.

Level 2 - other significant observable inputs (including quoted prices for similar securities, interest rates, prepayment speeds, credit risks, etc.).

Level 3 - significant unobservable inputs (including the Trust's own assumptions in determining fair value of investments).

The following is a summary of the inputs used as of December 31, 2015, in valuing the Trust's investments.

	Level 1	Level 2	Level 3	Total
Tax Exempt Obligations	\$-	\$412,270,647	\$-	\$412,270,647
Municipal Collateralized Debt Obligation	-	715,130	-	715,130
Tax Exempt Money Market				
Mutual Fund	16,000,000	-	-	16,000,000
Total Investments in Securities	\$16,000,000	\$412,985,777	\$-	\$428,985,777

ITEM 2. CONTROLS AND PROCEDURES. (a) Disclose the conclusions of the registrant's principal executive and principal financial officers, or persons performing similar functions, regarding 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 the 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. File as exhibits as part of this Form a separate certification for each principal executive officer and principal financial officer of the registrant as required by Rule 30a-2(a) under the Act (17 CFR 270.30a-2(a)), exactly as set forth below: CERTIFICATIONS I, [identify the certifying individual], certify that: 1. I have reviewed this report on Form N-Q of [identify registrant]; 2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report; 3. Based on my knowledge, the schedules of investments included in this report fairly present in all material respects the investments of the registrant as of the end of the fiscal quarter for which the report is filed; 4. The registrants other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Rule 30a-3(c) under the Investment Company Act of 1940) and internal control over financial reporting (as defined in Rule 30a-3(d) under the Investment Company Act of 1940) for the registrant and have: (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared; (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external

purposes in accordance with generally accepted accounting principles; (c) Evaluated the effectiveness of the registrants disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of a date within 90 days prior to the filing date of this report, based on such evaluation; and (d) Disclosed in this report any change in the registrants internal control over financial reporting that occurred during the registrants most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrants internal control over financial reporting; and 5. The registrants other certifying officer(s) and I have disclosed to the registrants auditors and the audit committee of the registrants board of directors (or persons performing the equivalent functions): (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrants ability to record, process, summarize, and report financial information; and (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrants internal control over financial reporting. Date: [Signature] [Title] Filed herewith. <PAGE> SIGNATURES [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/ Lisa M.Jones ----- Lisa M.Jones, President and Chief Executive Officer Date February 26, 2016 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/ Lisa M.Jones ----- Lisa M.Jones, President and Chief Executive Officer Date February 26, 2016 By (Signature and Title)* /s/ Mark E. Bradley ----- Mark E. Bradley, Treasurer and Chief Accounting and Financial Officer Date February 26, 2016 * Print the name and title of each signing officer under his or her signature.