

PIONEER MUNICIPAL HIGH INCOME ADVANTAGE TRUST  
 Form 4  
 September 24, 2010

**FORM 4** UNITED STATES SECURITIES AND EXCHANGE COMMISSION  
 Washington, D.C. 20549

OMB APPROVAL

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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

**STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES**

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

(Print or Type Responses)

1. Name and Address of Reporting Person \*  
 PIONEER FUNDS DISTRIBUTOR  
 INC

2. Issuer Name and Ticker or Trading Symbol  
 PIONEER MUNICIPAL HIGH  
 INCOME ADVANTAGE TRUST  
 [MAV]

5. Relationship of Reporting Person(s) to Issuer  
 (Check all applicable)

Director  10% Owner  
 Officer (give title below)  Other (specify below)

(Last) (First) (Middle)

3. Date of Earliest Transaction  
 (Month/Day/Year)  
 09/13/2010

60 STATE STREET  
 (Street)

4. If Amendment, Date Original Filed(Month/Day/Year)

6. Individual or Joint/Group Filing(Check Applicable Line)  
 Form filed by One Reporting Person  
 Form filed by More than One Reporting Person

BOSTON, MA 02109  
 (City) (State) (Zip)

**Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned**

| 1. Title of Security (Instr. 3)               | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | 4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Indirect Beneficial Ownership (Instr. 4) |
|---|--------------------------------------|--|--------------------------------|---|---|--|---|
|   |                                      |  | Code                           | V   | Amount  | (D)  | Price   |
| Pioneer Municipal High Income Advantage Trust | 09/13/2010                           | 09/13/2010   | S                              |   | 6,981   | D  | \$ 14.16  |
|   |                                      |  |                                |   | 0   |  |   |

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

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number.

**Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned**  
(e.g., puts, calls, warrants, options, convertible securities)

| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5) | 6. Date Exercisable and Expiration Date (Month/Day/Year) | 7. Title and Amount of Underlying Securities (Instr. 3 and 4) | 8. Price of Derivative Security (Instr. 5) | 9. Number of Derivative Securities Owned Following Reporting Transaction (Instr. 5) |
|--|--|--------------------------------------|--|--------------------------------|---|--|---|--|---|
|  |  |                                      |  | Code                           | V (A) (D)   | Date Exercisable   | Expiration Date   | Title                                      | Amount or Number of Shares  |

## Reporting Owners

**Reporting Owner Name / Address**

**Relationships**

Director    10% Owner    Officer    Other

PIONEER FUNDS DISTRIBUTOR INC  
60 STATE STREET  
BOSTON, MA 02109

X

## Signatures

Gerald H. Stanney, Jr. - Chief Compliance Officer

09/24/2010

\_\_Signature of Reporting Person

Date

## Explanation of Responses:

\* If the form is filed by more than one reporting person, see Instruction 4(b)(v).

\*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations. See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

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