



## Update to Cold Weather, Attendance, and Equity

### Key Findings

1. For the six days that MMSD has remained open despite wind chills below -26° F since January 2003, African-American and Hispanic students and those receiving free/reduced lunch had greater drops from typical attendance relative to their peers who were white and/or not receiving free/reduced lunch.
2. Among these six days, January 27, 2014 (75.2%) and January 7, 2015 (72.8%) are clear outliers for overall attendance. For the other four cold days, the attendance decrease from typical attendance was much smaller.

In February 2015, the Research & Program Evaluation Office was asked to investigate daily attendance by student group for all days since the 2002-03 school year where the wind chill was below -26° F, based on a list provided by Administrative Services. The table below shows estimated rates for the eleven days provided by Administrative Services (shaded in pale orange), as well as some surrounding school days to provide context.

Date	Wind Chill	Overall	Asian	African-American	Hispanic	Multiracial	White	Not free/reduced	Free/reduced
1/22/2003	-12° F	94.7%	96.5%	92.5%	94.3%	N/A	95.4%	95.7%	92.8%
<b>1/23/2003</b>	<b>-28° F</b>	<b>92.5%</b>	<b>95.6%</b>	<b>86.2%</b>	<b>89.5%</b>	<b>N/A</b>	<b>94.7%</b>	<b>95.0%</b>	<b>87.2%</b>
1/24/2003	-12° F	94.6%	96.4%	92.3%	92.9%	N/A	95.4%	95.6%	92.4%
1/21/2004	-1° F	96.6%	97.3%	95.2%	96.1%	N/A	97.2%	97.4%	95.0%
<b>1/22/2004</b>	<b>-26° F</b>	<b>96.6%</b>	<b>97.3%</b>	<b>94.6%</b>	<b>94.7%</b>	<b>N/A</b>	<b>97.6%</b>	<b>97.7%</b>	<b>94.3%</b>
1/23/2004	-11° F	94.8%	97.0%	91.9%	91.9%	N/A	96.4%	96.8%	90.9%
1/29/2004	-24° F	95.3%	96.9%	92.8%	94.3%	N/A	96.4%	96.5%	93.0%
<b>1/30/2004</b>	<b>-29° F</b>	<b>93.6%</b>	<b>96.2%</b>	<b>89.3%</b>	<b>90.8%</b>	<b>N/A</b>	<b>95.3%</b>	<b>95.8%</b>	<b>89.2%</b>
2/2/2007	-16° F	92.1%	95.0%	89.5%	90.5%	N/A	93.8%	93.7%	89.9%
<b>2/5/2007</b>	<b>-32° F</b>	<b>Schools Closed</b>							
2/6/2007	-19° F	85.4%	90.5%	78.7%	75.4%	N/A	91.0%	91.1%	77.4%
1/29/2008	-8° F	93.5%	95.8%	92.0%	93.1%	N/A	94.5%	94.9%	91.5%
<b>1/30/2008</b>	<b>-33° F</b>	<b>Schools Closed</b>							
1/31/2008	-12° F	93.2%	95.5%	90.5%	91.8%	N/A	94.9%	95.2%	90.4%
1/14/2009	-18° F	92.1%	95.9%	87.8%	91.3%	N/A	94.7%	95.3%	87.9%
<b>1/15/2009</b>	<b>-30° F</b>	<b>Schools Closed</b>							
1/16/2009	-24° F	Schools Closed							
<b>1/6/2014</b>	<b>-43° F</b>	<b>Schools Closed</b>							
1/7/2014	-32° F	Schools Closed							
1/16/2014	-2° F	93.4%	94.6%	90.1%	93.3%	91.6%	95.0%	95.3%	91.5%
<b>1/17/2014</b>	<b>-32° F</b>	<b>92.7%</b>	<b>95.1%</b>	<b>88.9%</b>	<b>92.4%</b>	<b>91.7%</b>	<b>94.1%</b>	<b>94.6%</b>	<b>90.6%</b>
1/24/2014	-21° F	90.1%	93.6%	84.2%	86.5%	87.0%	93.9%	94.9%	84.9%
<b>1/27/2014</b>	<b>-31° F</b>	<b>75.2%</b>	<b>84.5%</b>	<b>55.4%</b>	<b>70.0%</b>	<b>70.3%</b>	<b>84.7%</b>	<b>87.0%</b>	<b>62.6%</b>
<b>1/28/2014</b>	<b>-26° F</b>	<b>Schools Closed</b>							
1/29/2014	-15° F	93.5%	95.6%	89.9%	93.5%	91.7%	95.0%	95.4%	91.5%
1/6/2015	-17° F	91.9%	94.3%	86.6%	91.1%	91.5%	94.1%	94.6%	89.0%
<b>1/7/2015</b>	<b>-26° F</b>	<b>72.8%</b>	<b>82.7%</b>	<b>50.8%</b>	<b>62.2%</b>	<b>67.7%</b>	<b>85.8%</b>	<b>87.5%</b>	<b>57.1%</b>
1/8/2015	-25° F	87.0%	91.3%	76.9%	85.7%	83.2%	91.7%	93.0%	80.6%

Of the 11 times the wind chill has dropped below -26° F, MMSD has remained open six times. January 27, 2014, and January 7, 2015, had by far the largest differences in attendance relative to surrounding days. January 27, 2014, which was similarly cold, had attendance rates not far below normal. The days in January 2003 and 2004 when MMSD remained open again had only minimal differences from typical attendance. However, even on these days with smaller divergence from typical attendance, attendance dropped more for students of color and students receiving free/reduced lunch than for white students and students not receiving free/reduced lunch. Therefore, the trend of cold weather having a disproportionate impact on these groups holds across all days which RPEO was asked to investigate, but the magnitude of these disproportionate impacts is much larger for the last two days considered.