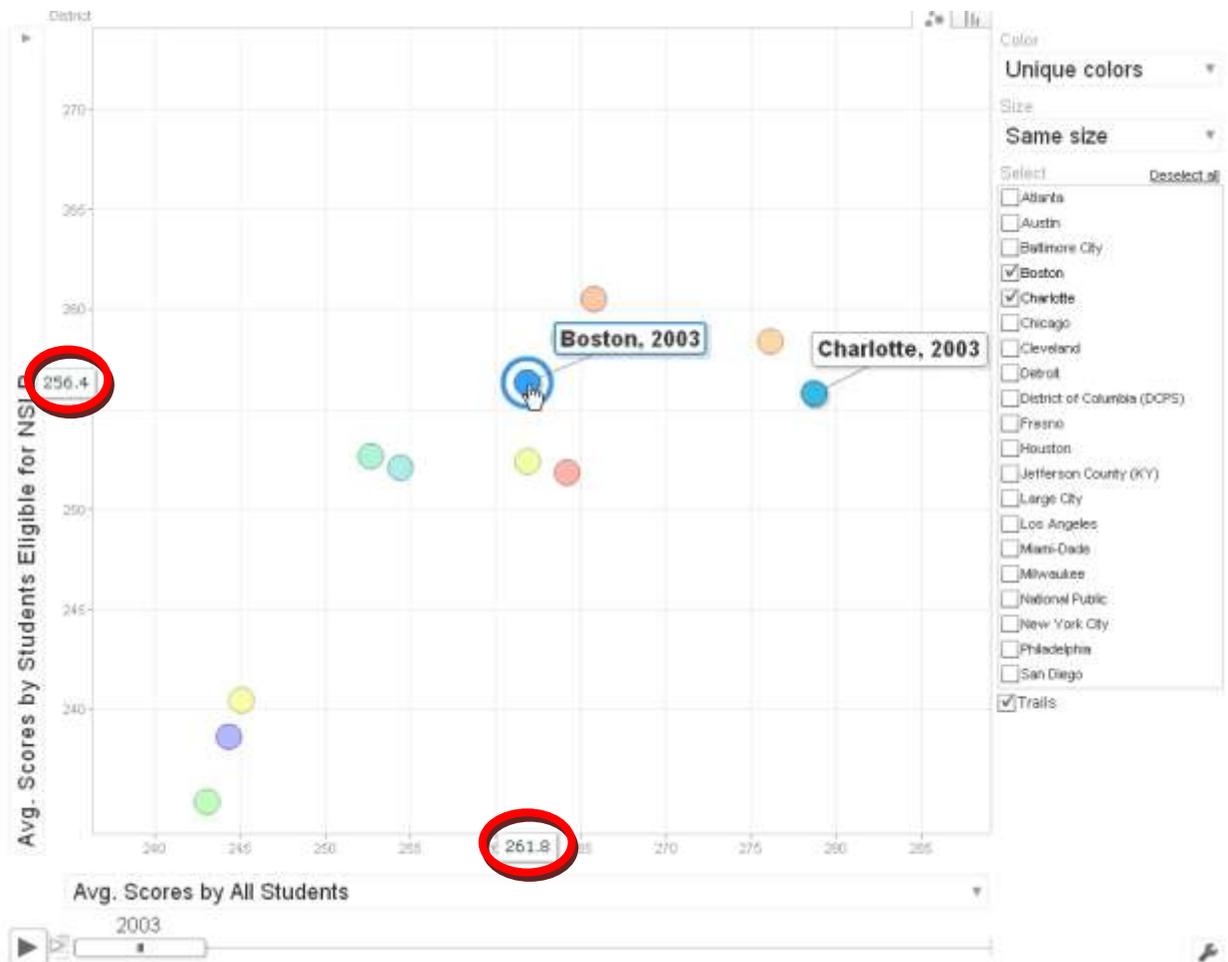


How to Use the Motion Chart: A NAEP Example

The Motion Chart provides a unique way to see data across time and by a variety of factors. The text below describes one example of how to view the results for eighth-graders in Boston and Charlotte by selecting specific settings for the X and Y axes, as well as the color and size of the circles. The example shown below is just one of many potential ways to analyze data using the Motion Chart, and therefore it is not intended to provide a broad summary of the findings that a user can explore with this tool.

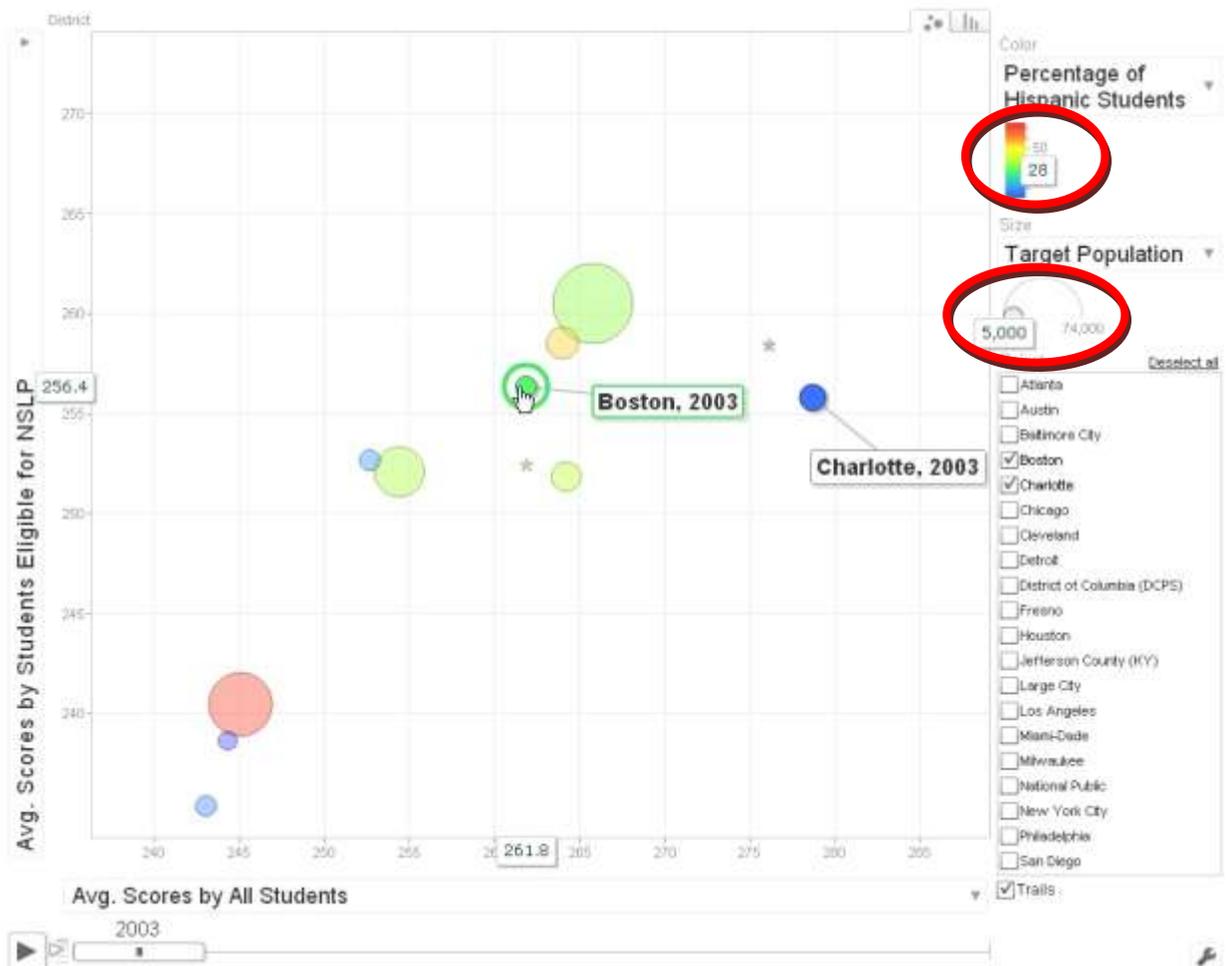
Analyze where districts plot for two student groups

You can determine the X and Y axes by clicking on the arrows and selecting a variable (e.g., average scale scores for all students). For instance, the chart below shows the average scores in 2003 for all students on the X axis, and the average score for students eligible for the National School Lunch Program (NSLP) on the Y axis. In this example, the cursor is hovering over the circle representing Boston, showing the average scale score for all students in 2003 as 261.8 on the X axis, and the score for students eligible for the NSLP as 256.4 on the Y axis. From just a quick glance at the chart, it's clear that the blue circle representing Charlotte has a higher average score for all students but a similar score for students eligible for the NSLP.



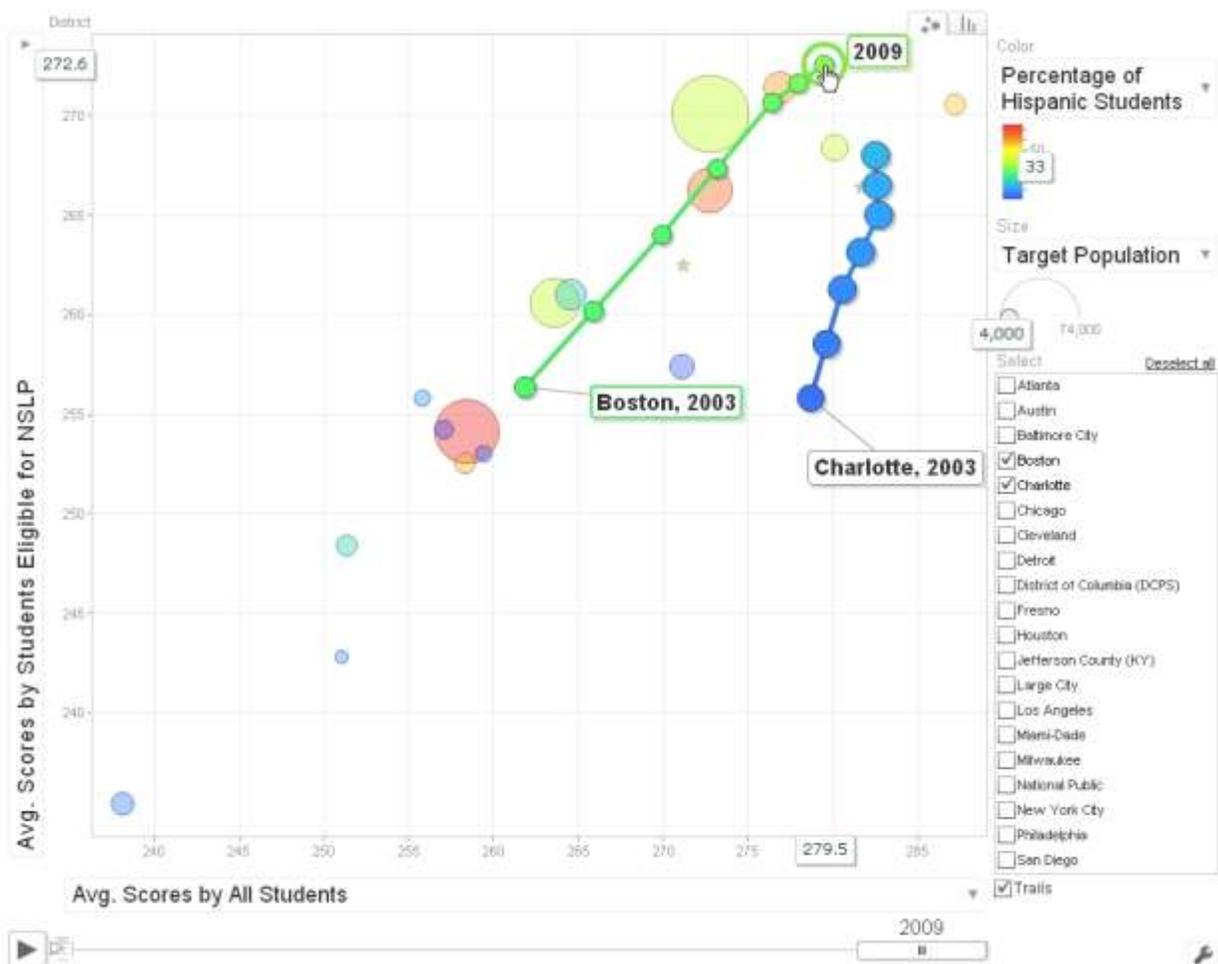
Use color and size to create context

The color and size of the circles on the chart can be selected to show all the same variables that can be shown in the X and Y axes. For instance, the chart below uses color to indicate the percentage of Hispanic students in each urban district. Boston shows up green because 28% percent of eighth-graders in Boston were identified as Hispanic students according to school records. Charlotte shows as blue because there are fewer Hispanic students, while a red circle would indicate a higher percentage. Similarly, the size of the circle can provide some context for understanding scores. In the example below, the size of the circle represents the target population of eighth-graders in each district; the larger districts have larger circles. The largest district, New York City, is shown in the size legend as 74,000; by hovering the cursor over Boston, the chart displays that the target population for Boston is 5,000.



Watch how districts move over time

The Motion Chart is best used to see how data changes over time. The chart below shows how district scores change over the years. By clicking the play button, you can watch each year appear on the chart. Selecting “trails” in the lower right will plot data across years. By looking at the resulting lines, several details become apparent. For instance, you can see that the average score for all students and students eligible for the NSLP increased in Boston between 2003 and 2009. Also, you can see the changes in Boston relative to other districts that are selected. For instance, in 2003 the score for all students in Boston (261.8) was 17 points lower than in Charlotte (278.7), but in 2009 the score for all students in Boston (279.5) was 3 points lower than in Charlotte (282.5). In addition to the position of the circles moving on the screen, the size and color of the circles will change accordingly across years as well.

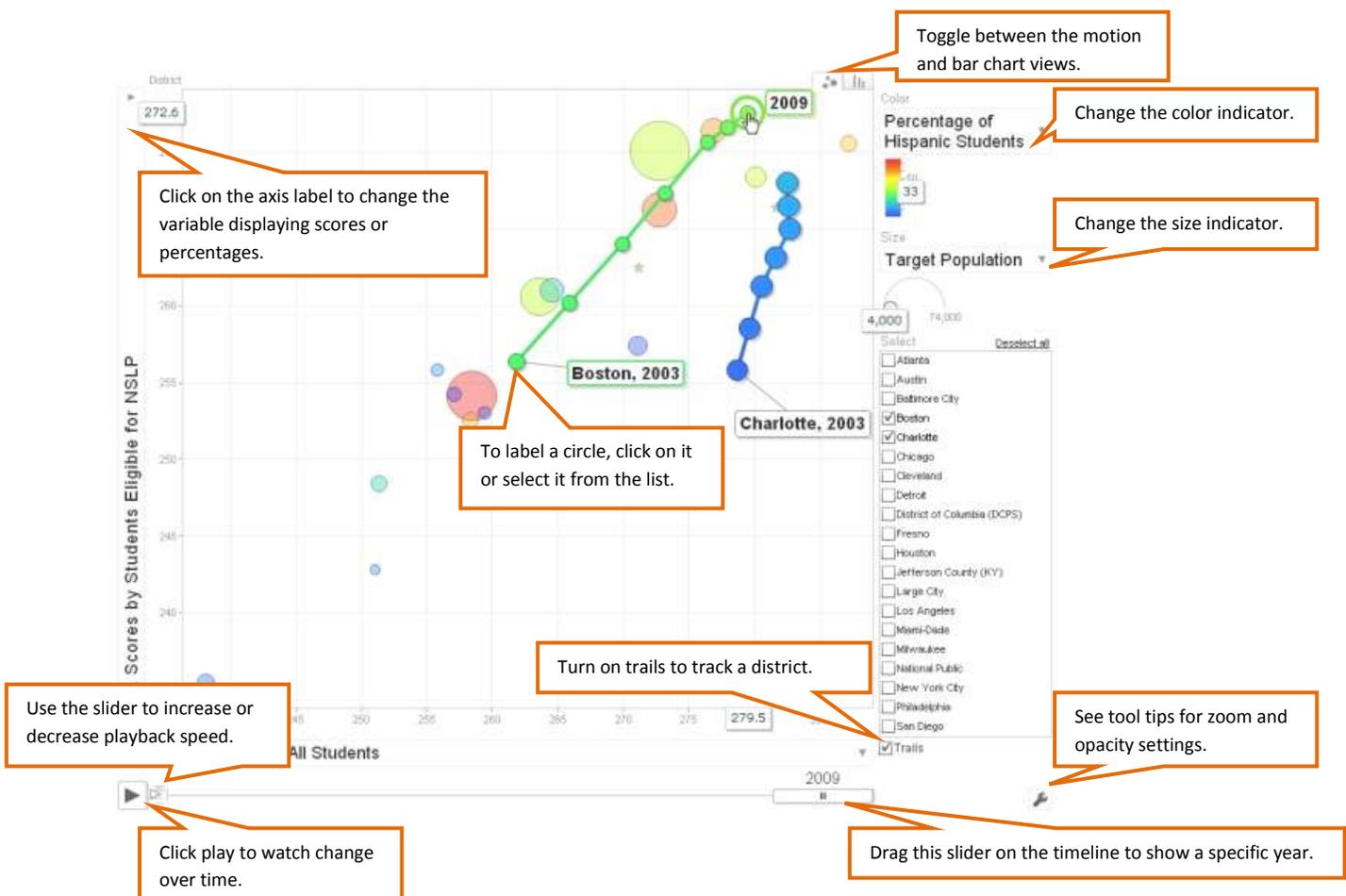


Cautions in interpretations

The user is cautioned against assuming statistical significance from the apparent differences shown in the Motion Chart. For instance, the Motion Chart does not indicate whether the apparent difference between scores for all students in Boston and Charlotte was statistically significant, and it does not show whether the change in the score for Boston was or was not due to random measurement error. For complete data and to perform the appropriate statistical tests needed to confirm whether apparent differences are significant, see the NAEP Data Explorer (<http://nces.ed.gov/nationsreportcard/naepdata/>).

Users of this chart are cautioned against interpreting the results as implying causal relations. Inferences related to group performance, for example, should take into consideration the many socioeconomic and educational factors that may also impact performance.

Using specific features on the Motion Chart



Motion Chart is a free application originally developed by [Gapminder](http://www.gapminder.org/) (see <http://www.gapminder.org/>), and made publicly available by Google.

Learn more at <http://docs.google.com/support/bin/answer.py?hl=en&answer=91610>.