Over the last three missions, we explored relationships between SAT scores and demographic factors in New York City public schools. For a brief bit of background, the [SAT](https://en.wikipedia.org/wiki/SAT), or Scholastic Aptitude Test, is a test that high school seniors in the U.S. take every year. The SAT has three sections, each of which is worth a maximum of 800 points. Colleges use the SAT to determine which students to admit. High average SAT scores are usually indicative of a good school.

New York City has published data on [student SAT scores](https://data.cityofnewyork.us/Education/SAT-Results/f9bf-2cp4) by high school, along with additional demographic data sets. Over the last three missions, we combined the following data sets into a single, clean pandas dataframe:

* [SAT scores by school](https://data.cityofnewyork.us/Education/SAT-Results/f9bf-2cp4) - SAT scores for each high school in New York City
* [School attendance](https://data.cityofnewyork.us/Education/School-Attendance-and-Enrollment-Statistics-by-Dis/7z8d-msnt) - Attendance information for each school in New York City
* [Class size](https://data.cityofnewyork.us/Education/2010-2011-Class-Size-School-level-detail/urz7-pzb3) - Information on class size for each school
* [AP test results](https://data.cityofnewyork.us/Education/AP-College-Board-2010-School-Level-Results/itfs-ms3e) - Advanced Placement (AP) exam results for each high school (passing an optional AP exam in a particular subject can earn a student college credit in that subject)
* [Graduation outcomes](https://data.cityofnewyork.us/Education/Graduation-Outcomes-Classes-Of-2005-2010-School-Le/vh2h-md7a) - The percentage of students who graduated, and other outcome information
* [Demographics](https://data.cityofnewyork.us/Education/School-Demographics-and-Accountability-Snapshot-20/ihfw-zy9j) - Demographic information for each school
* [School survey](https://data.cityofnewyork.us/Education/NYC-School-Survey-2011/mnz3-dyi8) - Surveys of parents, teachers, and students at each school

New York City has a significant immigrant population and is very diverse, so comparing demographic factors such as race, income, and gender with SAT scores is a good way to determine whether the SAT is a fair test. For example, if certain racial groups consistently perform better on the SAT, we would have some evidence that the SAT is unfair.

In the last mission, we began performing some analysis. We'll extend that analysis in this mission. As you can see, we've included the code to read in all of the data, combine it, and create correlations in the notebook. If you'd like to see the finished notebook that contains solutions for all of the steps, you can find it [in the GitHub repo for this mission](https://github.com/dataquestio/solutions/blob/master/Mission217Solutions.ipynb).

The dataframe combined contains all of the data we'll be using in our analysis.

Instructions

* Set up matplotlib to work in Jupyter notebook.
* There are several fields in combined that originally came from a [survey of parents, teachers, and students](https://data.cityofnewyork.us/Education/NYC-School-Survey-2011/mnz3-dyi8). Make a bar plot of the correlations between these fields and sat\_score.
  + You can find a list of the fields in the survey\_fields variable in the notebook.
* Consult the data dictionary that's part of the zip file you can download [from the City of New York's website](https://data.cityofnewyork.us/Education/NYC-School-Survey-2011/mnz3-dyi8).
  + Did you find any surprising correlations?
* Write up your results in a Markdown cell.