**Study Question 1:** What percentage of U.S. 15-year-olds is interested in pursuing a career in science by demographics (gender, race/ethnicity, ESCS quarters, and immigrant status) and a school level variable (school location)? How does that change when looking at specific fields in science?

**Gender**

* U.S. boys outperform girls by 7 points on average, but girls are 10 percentage points more likely to envision a science career: 45% of 15-year-old girls vs. 35% of boys.
  + More than one in three 15-year-old girls sees herself working in medicine (37%), whereas less than one in ten boys (9%) expects to do so.
  + Girls are less likely to express interest in engineering and tech fields: though 26% of boys are interested in these fields, only 8% of girls are.
  + Girls striving for engineering/tech careers performed at the same level as their male counterparts. Similarly, boys and girls who weren’t interested in science-related careers also showed no significant differences in PISA science scores. However, on average, boys interested in careers in medicine outperformed their female peers by 41 score points.
    - Among girls, there is no statistically significant difference between those interested in medicine and those not interested in any kind of science career.
    - Among boys, those interested in medicine outscore their peers interested in non-science careers by 44 score points.

**Race/ethnicity**

* Even after controlling for ESCS, gaps in student science scores by race/ethnicity persist.
* There are no statistically significant differences between the scores of White and Asian students at the lowest and highest quartiles of the ESCS index; yet, on average, a White student in the *lowest* ESCS quartile received a PISA science score of 482, while a Black student in the *highest* ESCS quartile received a score of 474.
* Fifty percent of Asian students foresee themselves pursuing science careers, whereas 38%, 39%, and 41% of Black, Hispanic, and White students do, respectively.
  + The percentage of students interested in engineering/tech ranges from 12% of all Black students to 23% of all Asian students.

**SES**

* In the lowest SES quartile, 40% of students were interested in a science career, compared to 48% in the highest SES quartile. There was **no significant difference between percentage of students in the lowest SES quartile interested in science careers**, and the percentage of students in the second lowest SES quartile interested in science careers. However, there **was a significant difference between the percentage of students interested in science careers in the lowest** and second-lowest SES quartiles, and the percentage of students interested in science careers in the 3rd SES quartile (as well as the highest, of course).
* Students who are interested in science careers perform better than those students who are not interested in science careers for each SES quartile. Additionally, in each SES quartile, students who are interested in science careers do not outperform students who are not interested in science careers in the above SES quartile.

**Immigration status**

* On average, 15-year-old students native to the U.S. tended to outperform their second-generation peers, who in turn tended to outperform first-generation students.
  + Indeed, the largest gap, 50 score points—or one-half of a standard deviation—was between native (506 score points) and first-generation students (456), with second-generation students (482) falling in between.
* Despite the 24-point score gap between native and second-generation students, there is *no* statistically significant difference between two groups of students after accounting for socioeconomic status, and the gap between native and first-generation students falls to 30 score points.
* At the third national quarter of ESCS, there is no statistically significant difference between any of the three immigration categories.
* Career interest differences vary less by student immigrations status. For instance, 16% of students native to the U.S. imagine themselves working in engineering/tech versus 19% of second-generation students and 18% of first-generation students. As for medicine, 23%, 26%, and 25% of native, second-generation, and first-generation students indicate their interest in the field.

**School location**

* On average, 15-year-old students who attend schools whose principals say are in non-urban locations in the U.S. tended to outperform their peers who attend schools in urban locations by 24 points.
* There were few difference between students who attend non-urban schools versus urban schools in terms of their preferences for science careers. For non-science careers, general science careers, and engineering/tech, there was no significant difference between the percentages of urban students interested in these areas versus non-urban students. For example, 60% of non-urban students were not interested in science careers, while 60% of urban students were not interested in science careers. The only significant difference was between those students interested in careers in medicine: 25% of non-urban students were interested in careers in medicine, while only 22% of urban students were interested in careers in medicine.

**Proficiency levels**

* More than 10 percentage points separate non-science from engineering students at top and bottom proficiency levels
  + **BOTTOM**: Below PL2
    - 22% of all non-science students are at the bottom proficiency level
    - 18% of all medical students are at the bottom proficiency level
    - 9% of all engineering/tech students are at the bottom proficiency level
  + **TOP**: At or Above PL5
    - 7% of all non-science students are at the top proficiency level
    - 7% of all medical students are at the top proficiency level
    - 18% of all engineering/tech students are at the top proficiency level

**Study Question 2:** Are the careers of students’ parents associated with the careers students expect to have themselves? For e.g. if a parent has a career in science, is a student more likely to express interest in a science career?

* Different models were created to understand the relationship between students’ parents’ careers and their own interests:
  + In the U.S., 33% of students had at least one parent with a career in science, while 67% did not have either parent with a career in science. There was no significant difference in student performance in science between those two groups.
  + Descriptively, 37% of students who at least one of their parents had a career in science were also interested in a science career. On the other hand, for students where neither of their parents had a career in science, only 30% were interested in a science career.
  + A linear regression model with a derived variable that represents if *either* parent has a career in science found a significant positive relationship between a parent having a career in science and a student expressing interest in a science career, with a coefficient of 0.08.
  + Likewise, the same model using a logistic regression found a significant positive relationship between a parent having a career in science and a student expressing interest in a science career, with a coefficient of 0.34. The odds ratio for this value is 1.4, which means that the probability of a student being interested in a career in science who has at least one parent in science is 58%, compared to the null hypothesis of 50%.
  + These two regression models are robust even when controlling for socioeconomic status, plausible values in math and reading, and gender. The coefficient for the science parent dummy variable in the logistic model with controls is 0.27, while for the linear model with controls the coefficient value is 0.07.