**Title**

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**Introduction**

[Something about] heightened awareness and encouragement for students in the United States to pursue careers in science [source]. This analysis examines U.S. 15-year-old students who reported career expectations in science in the 2015 Program for International Student Assessment (PISA). This analysis explores three [insert word: aspects?]: (1) selected demographic characteristics of students expecting careers in science, (2) the relationship between students’ attitudes toward science and their expectation of science careers, and (3) the association between students’ science career expectations and their science performance. Measuring average academic performance across countries can mask inequities by subgroups such as science career expectations. Understanding how variables that are connected to students’ career expectations in science will provide insight into [add something].

Students’ career expectations have been found to be highly predictive of students’ actual career choices and outcomes later in life ( (Tai, Liu, Maltese, & Fan, 2006; Goyette, 2008; Aschbacher, Ing, & Tsai, 2014).

**Methods and data sources**

*Main variable: science careers*

In PISA 2015, 15-year-old students answered “what kind of job [they] expect to have when they are about 30 years old” (ST114). Answers to this open-ended question were coded into respective ISCO-08 codes. These codes were used to define science careers (for the purposes of deriving science career expectations) in the following manner, which is the same way that the OECD has defined science careers:

* All science and engineering professionals (except product and garment designers, graphic and multimedia designers)
* All health professionals (except traditional and complementary medicine professionals)
* All information and communications technology professionals
* Science technicians and associate professionals:
  + Physical and engineering science technicians
  + Life science technicians and related associate professionals
  + Air traffic safety electronic technicians
  + Medical and pharmaceutical technicians except medical and dental prosthetic technicians
  + Telecommunications engineering technicians

More broadly, science-related career expectations are defined as those career expectations (whose realization requires further engagement with the study of science beyond compulsory education, typically in formal tertiary education settings).

The same methodology was used to code responses for mother and father’s occupation. The questions come from the student background questionnaire and read: “The following two questions concern your [mother/father’s] job: (If [she/he] is not working now, please tell us [her/his] last main job.)

What is your [mother/father’s] main job? (e.g. school teacher, kitchen-hand, sales manager) Please type in the job title

What does your [mother/father] do in [her/his] main job? (e.g. teaches high school students, helps the cook prepare meals in a restaurant, manages a sales team) Please use a sentence to describe the kind of work she does or did in that job.”

A more refined coding of science careers was also implemented, with medical careers disaggregated from science careers in the following manner: all health professionals (except traditional and complementary medicine professionals) were coded as medical careers.

*Student demographic variables*

Gender

Race/ethnicity

Immigration status

Science interests

*Other variables*

School location:

This project uses the school location variable of the PISA school questionnaire to define urbanicity. This variable asks principals in what kind of community their school is located and provides the following options: (1) a village, hamlet, or rural area (fewer than 3,000 people), (2) a small town (3,000 to about 15,000 people), (3) a town (15,000 to about 100,000 people), (4) a city (100,000 to about 1,000,000 people), and (5) a large city (with over 1,000,000 people). This analysis considers schools located in the last two options as “urban,” while all other schools are defined as non-urban, consistent with the definition used by the OECD (OECD 2013).

**Study Questions**

**Key Findings**

**Study Question 1:**

**Study Question 2:**

**Study Question 3:**

**Learn More**

**Technical Notes**

* On average, U.S. students who want to pursue science careers perform 29 score points higher on the PISA science assessment than do their peers with non-science professional interests.
* 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 imagines a science careers 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.
  + ~~Despite being more likely to want to pursue science professionally,~~ 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. In no PISA-participating country are girls more likely to see themselves in engineering/tech than boys.
  + Girls striving for engineering/tech careers performed at the same level as their male counterparts ~~peers with the same professional interests~~. 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.
* 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.
* RACE/ETHNICITY:…. (CONTROL FOR SES)
* SCIENCE INTERESTS:….

**References**

OECD (2013), "What Makes Urban Schools Different?", PISA in Focus, No. 28, OECD Publishing, Paris.