

# STEP UP

PHYSICS TOGETHER

## QuarkNet STEP UP workshop



Learn more at [STEPUPphysics.org](https://STEPUPphysics.org)

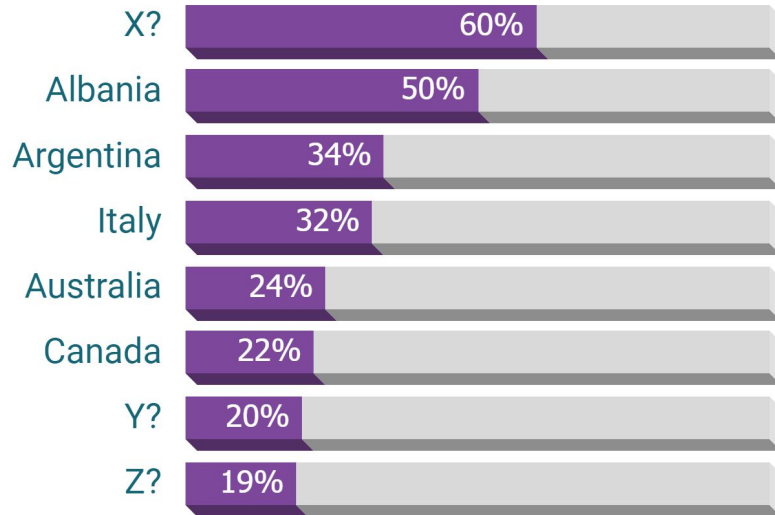
# Context



Consider Women in Physics in the United States

# Comparing Across Countries

Percentage undergraduate physics degrees awarded to women



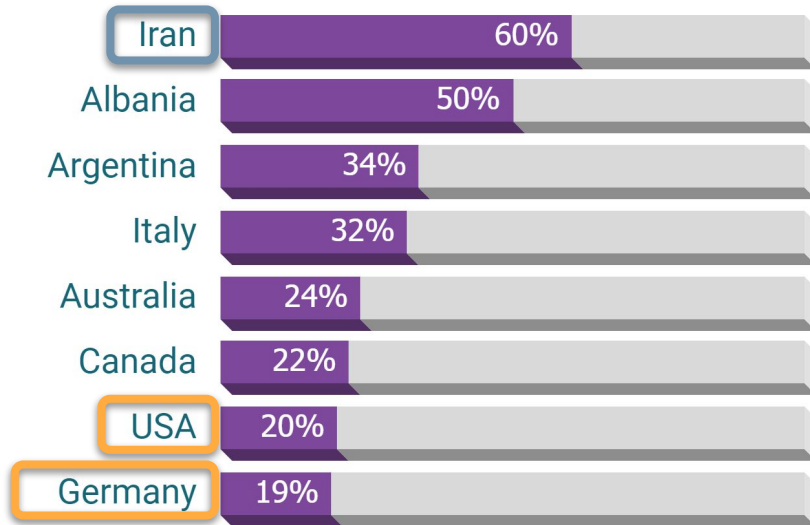
**Talk to neighbor, then show of fingers:**

- Which is country X?  
(highest percentage)
- Which is country Z?  
(lowest percentage)
- Country Y?

👉 :Germany    ✌️ :Iran    🖐️ :USA

# Comparing Across Countries

Percentage undergraduate physics degrees awarded to women



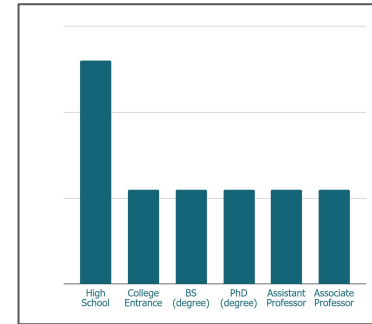
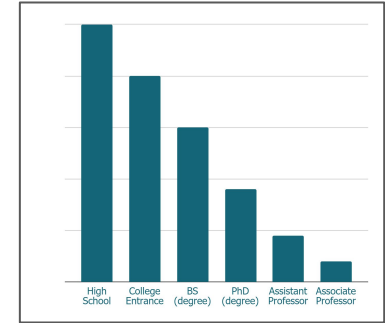
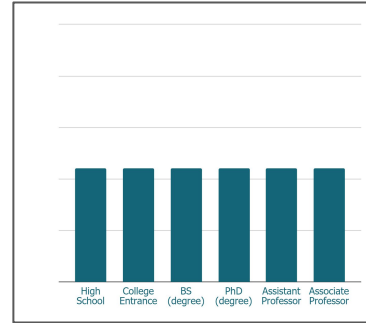
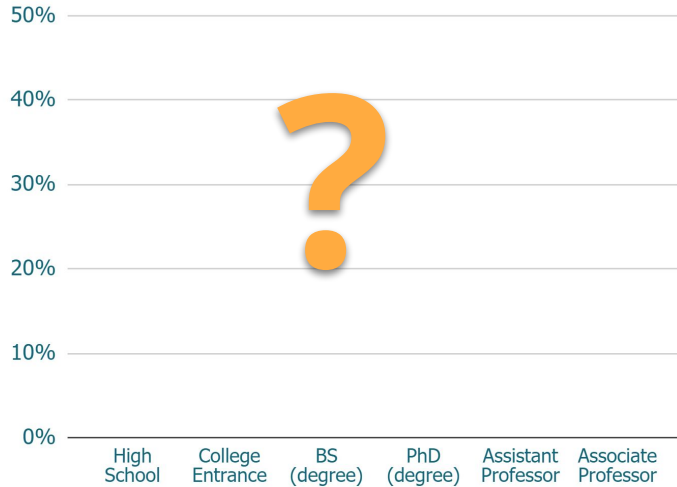
👉 :Germany    👍 :Iran    🖐️ :USA

- Check your predictions

**Source:** IUPAP International Conference on Women in Physics Proceedings

# Gender Differences in Physics

Percentage women in physics at various academic stages

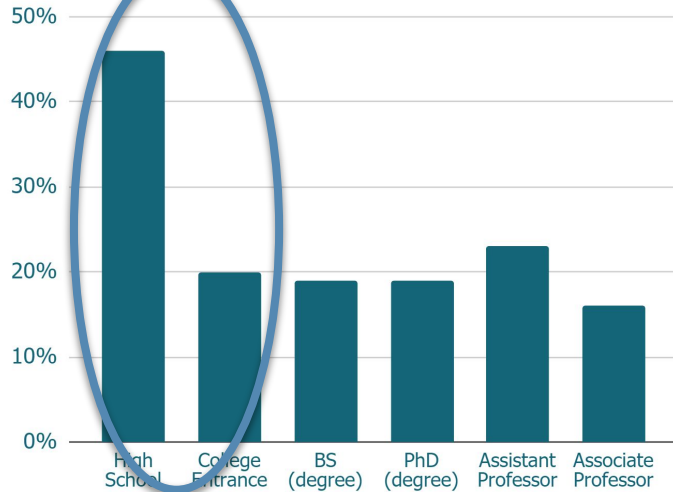


**Predict:** What is the trend in women pursuing physics?  
(Increasing? Holding Steady?)

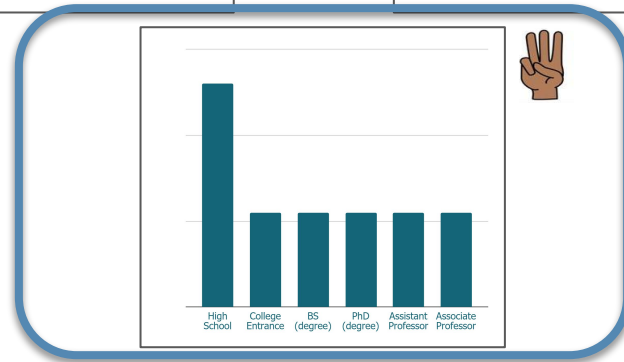
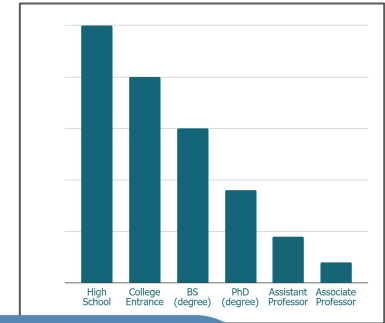
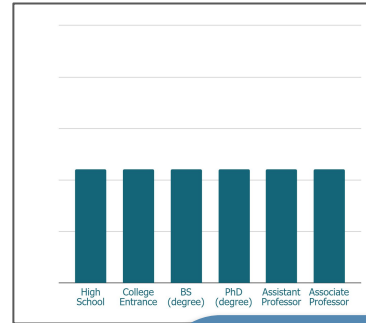
Pick your choice via a show of fingers.

# Gender Differences in Physics

Percentage women participants in physics at various academic stages



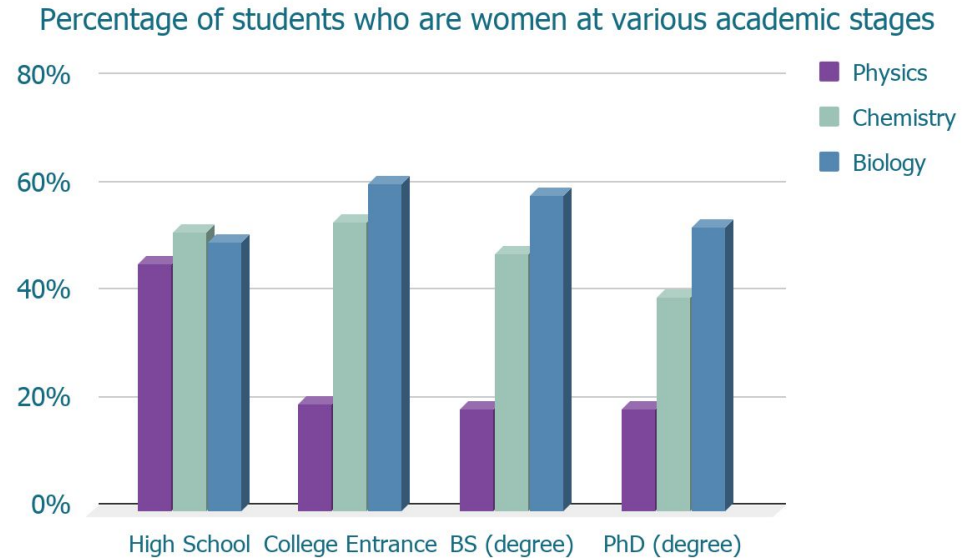
Note that college entrance refers to first-year students' intent to major in the field.



# Compared to Other Sciences

Examine: What trends do you see?

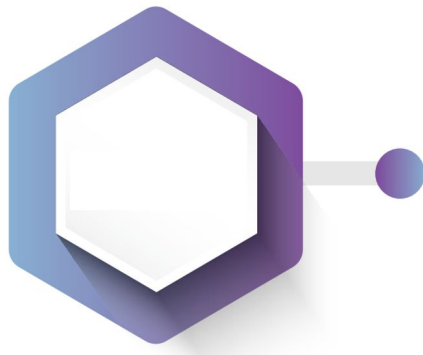
Participation of women in physics in college decreases drastically compared to their participation in biology and chemistry.



Source: [AIP](#), [HERI](#), [IPEDS](#)

# Project Goals

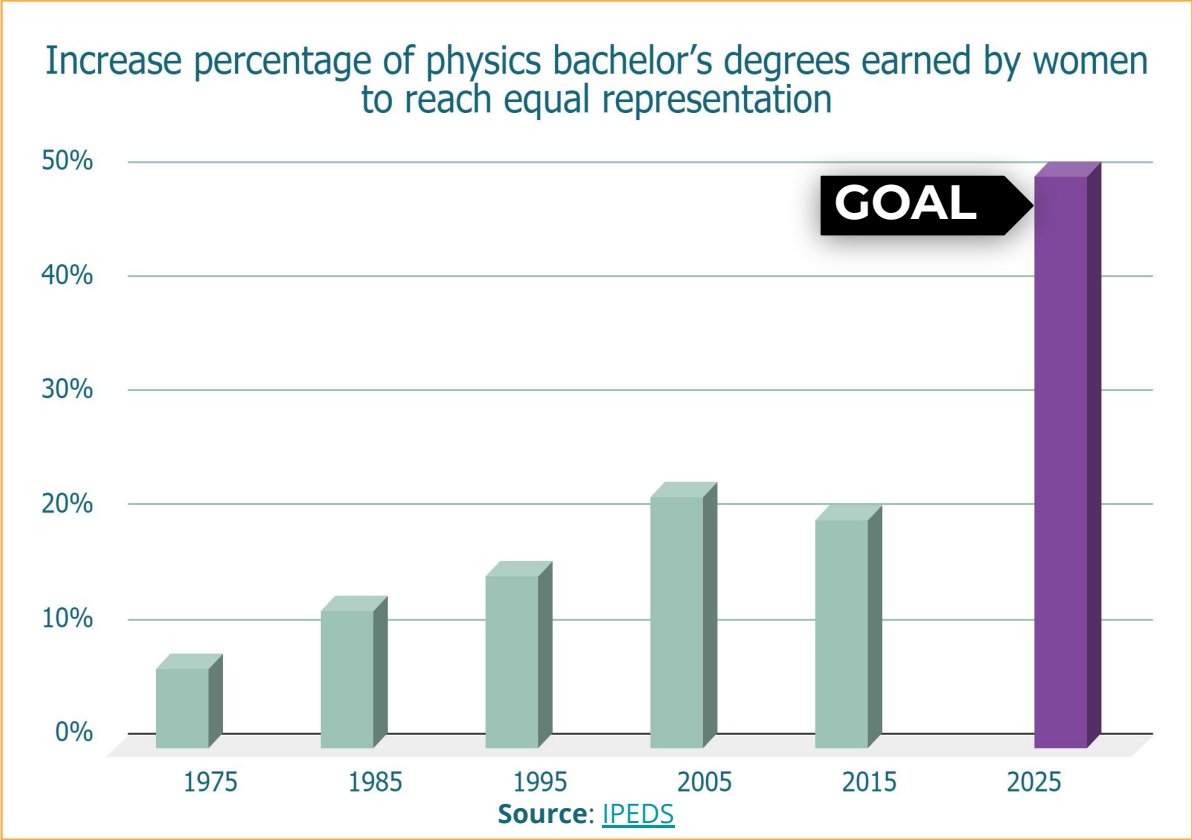
- Draw on research and evidence to mobilize thousands of HS physics teachers in the U.S.
- Reduce barriers and inspire young women to pursue physics degrees in college
- Shift deep-seated cultural views about who does physics



Although young women comprise 50% of high school physics classrooms, only 20% of physics undergraduate majors are women. Help us change things by inspiring high school teachers to energize young women to study physics.



# Project Broad Goal



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If half of US high school physics teachers encourage **just one more female student** to pursue physics as a major, a historic shift will be initiated - female students will make up 50% of incoming physics majors

You can be part of a historic change in physics!



# Why intervene in high school?

- Most women physicists become interested at this time
- Compared to elementary school
  - Teachers have greater content knowledge and are more vested in physics
  - Students are closer to decision-making time for majors
- Compared to college
  - Classes are smaller and there is more time to build relationships

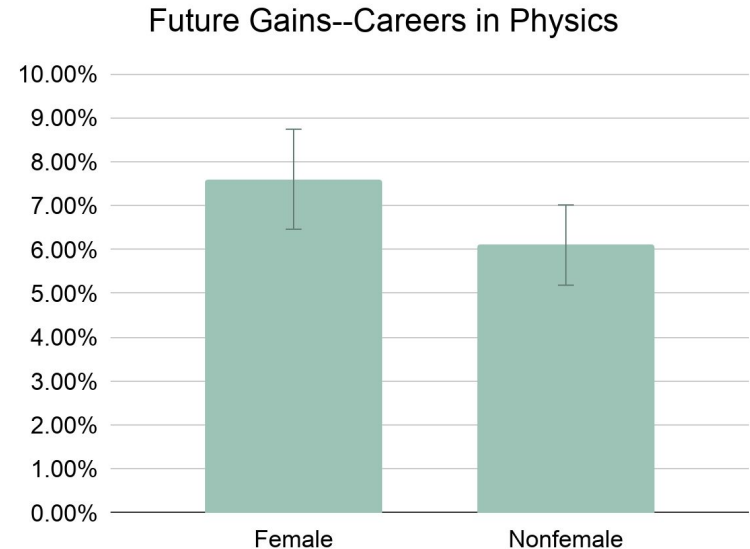
# Lesson Evidence: Careers in Physics

## What is the effect of this lesson on students?

Shown to improve students' future physics intentions

- majoring in physics in college
- intention to pursue physics-related careers

Overall gains from the lesson across all students are positive



N = 823

Source: Cheng et al., 2018