



**TEACH@MINES**  
**COLORADO SCHOOL OF MINES**



**Becoming “The” Colorado University  
for Math, Science, and CS Teaching**

# Teach@Mines

1. Teach@Mines future plans
  - a. Develop a non-thesis masters
  - b. Apply for authorization to offer Colorado teacher licensure
2. The culture within our community related to teaching.

# Teach@Mines

## Culture:

A recent survey response to the question of, “Is there anything else related to Teach@Mines, that you’d like to share?”

*I do not like the negative associations with teaching at this school. Sometimes I feel discouraged and put down by my peers and even my counselor. I have heard that I am "at the wrong school" and "should go into industry first" after mentioning that I want to be a teacher, these kind of comments can make me embarrassed about my intended career path. Besides that I really like Field Experience and am still excited to pursue a career in education.*

# Teaching: The Best Kept Secret!

## Benefits Compared to Industry and University Teaching

### Get the Facts Out

Changing the conversation around  
STEM teacher recruitment



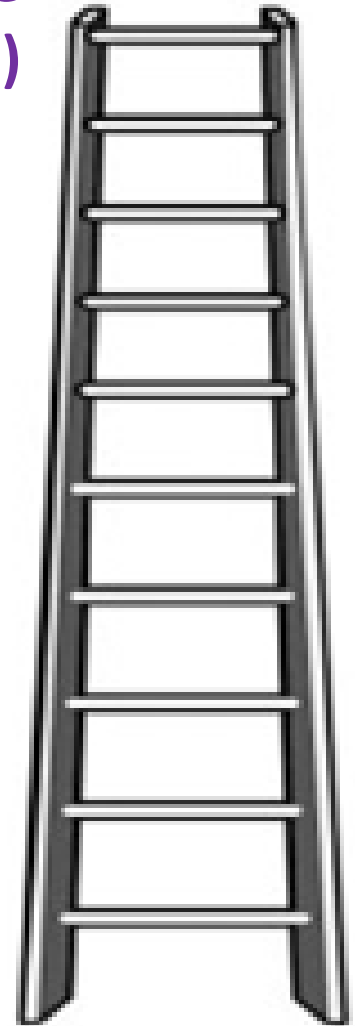
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# Rate your life

On **which step of the ladder** would you say you personally feel you stand at this time?

Best possible  
life (10)



Worst possible  
life (0)

# National Survey

The Cantril Self-Anchoring Scale†

Q1

On **which step of the ladder** would you say you personally feel you stand at this time?

Q2

On which step do you think you will stand about **five years from now**?

Best possible  
life (10)



Worst possible  
life (0)

*Top*

7 or greater for Q1  
& 8 or greater on  
Q2

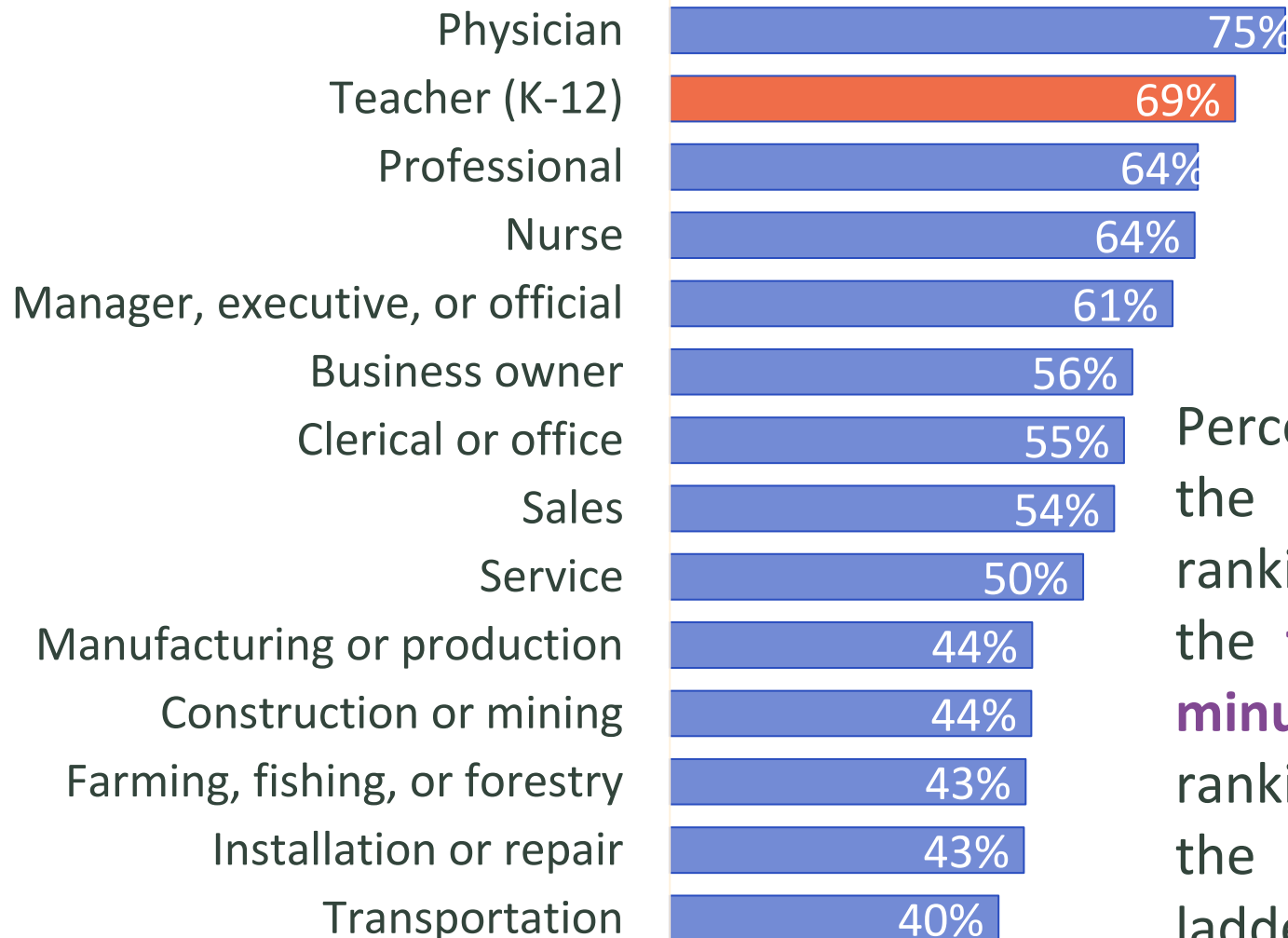
*Middle*

4 or less for  
Q1 & Q2

*Bottom*

Did you  
know...

*Teachers in the United States rate their lives  
better than all other occupation groups,  
trailing only physicians.*



Percentage shown is  
the % of people  
ranking their lives at  
the **top** of the ladder  
**minus** the % of people  
ranking their lives at  
the **bottom** of the  
ladder.

# Question

Why do you think teachers rate their lives so highly compared to other professionals?



# Teacher Well-being

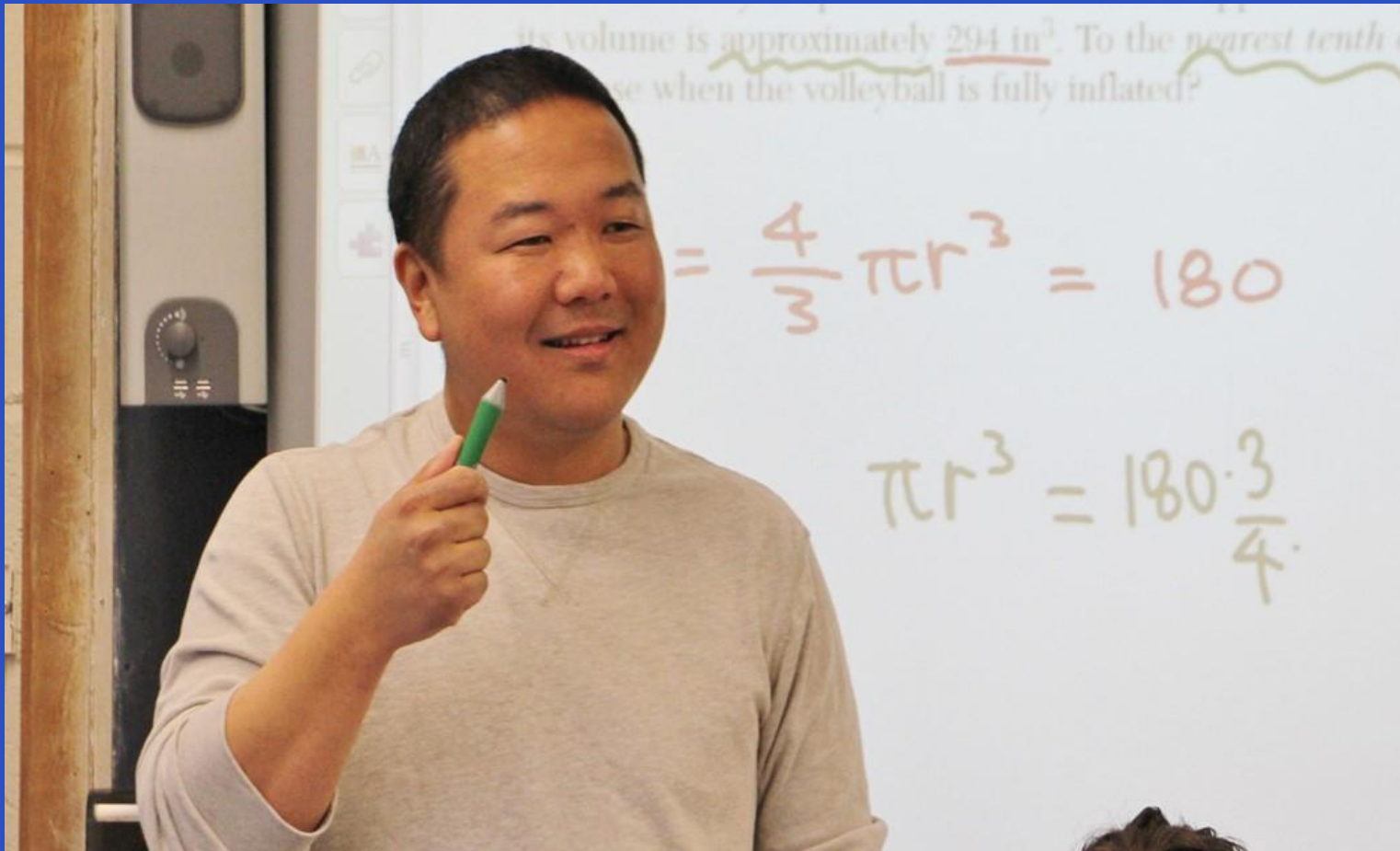
- Work-life balance
- Student and colleague relationships
- Financial stability



# Did you Know...

The middle 50% of mid-career teacher salaries ranges between **\$64,000 and \$100,000**, nationally

...range shown is IQR: 25<sup>th</sup> – 75<sup>th</sup> percentile



# Teacher Salaries

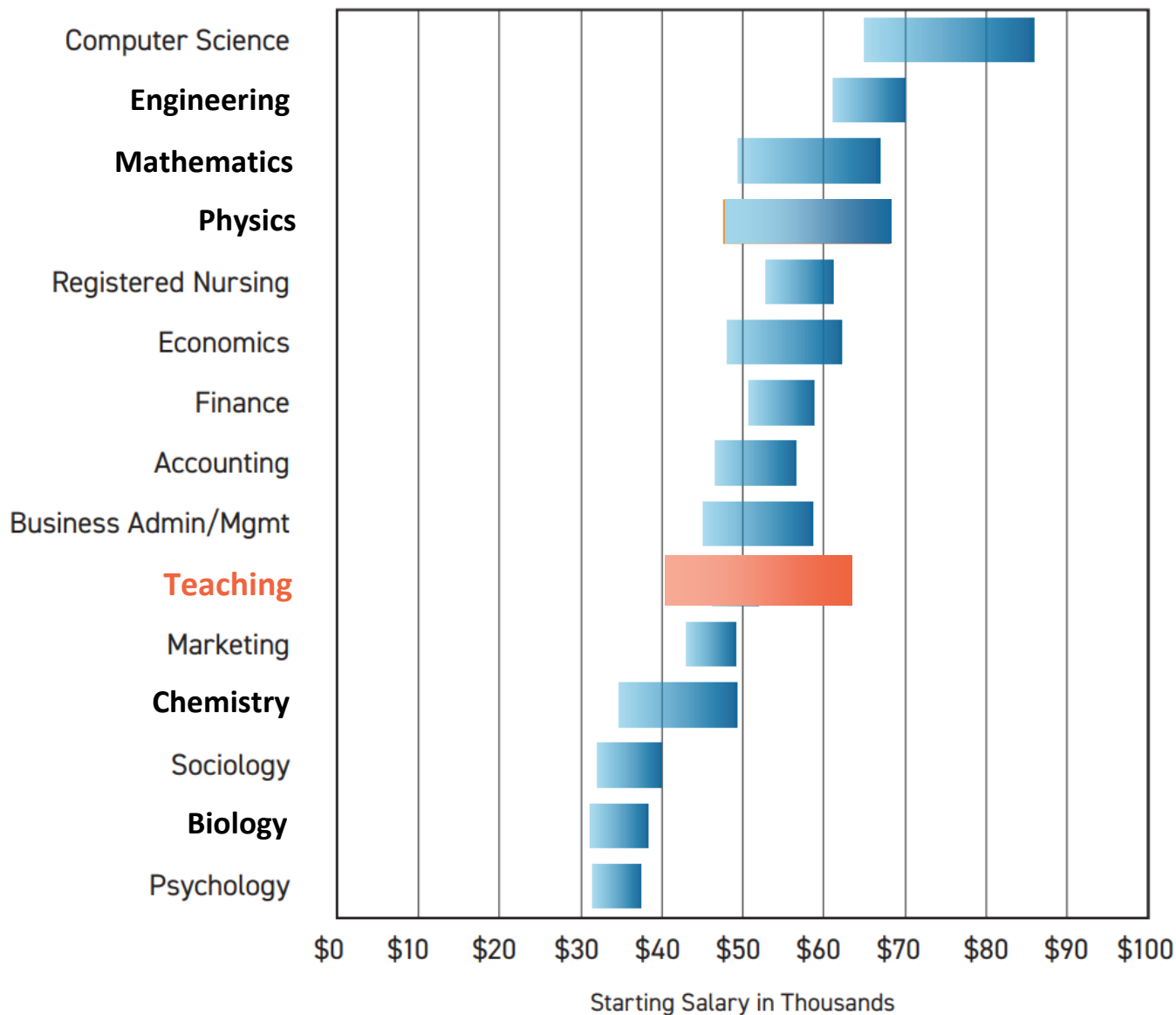


	BA yr 1	MA yr 15
<b>Westminster Public Schools (21-22)</b>	\$55,038- \$60,857	\$72,280- \$105,589
<b>Jefferson County Public Schools (21-22)</b>	\$43,274- \$45,221	\$83,146- \$83,894
<b>Denver Public Schools</b> (+\$2K math, \$6K student loans, +other) (21-22)	\$47,291- \$55,676	\$77,709 - \$88,945
<b>St. Vrain Valley Schools (21-22)</b>	\$45,250- \$47,925	\$73,305 - \$83,825

186-day contract -> \$50,000 = \$33.60/hr

+ Extra Pay for coaching, clubs, etc..

# Typical salaries of bachelor degree recipients, Class of 2018



*Note:* Teaching is a **school-year position**, all others are 12-month

Bars represent the middle 50% of salaries, i.e. between the 25th and the 75th percentiles.

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# A Teacher's Life by the Numbers!

Jefferson and Denver County, CO



Teacher  
Salaries

1<sup>st</sup> Year Teacher  
with a B.A.

\$43,274-  
\$51,083\*

15<sup>th</sup> Year Teacher  
with a M.A.

\$83,146-  
\$88,945\*

\*Data from 2021-2022

Plus extra duty pay for coaching and club sponsorship

## What does that mean for a teacher in this area?

The average  
annual wage is  
**\$78,971**



Median  
home value is  
**\$588,615**



Average rent for a  
**two-bedroom**  
apartment is **\$1,605**



1<sup>st</sup> Year Teachers can buy  
houses like these\*:



**\$250,000**

Mid-Career Teachers can  
buy houses like these\*:



**\$586,000**

\*With a 5% down payment for 1<sup>st</sup> year teachers and 20% down for mid-career and while spending 36% of their income on housing





# Administrator Salaries



## St. Vrain Valley Schools

	<b>Calendar*</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Asst. Principal - High</b>	215 Days	\$92,697	\$128,009
<b>Director – Innovation Programs</b>	248 Days	\$103,325	\$142,687
<b>Principal - High</b>	225 Days	\$113,954	\$157,365
<b>Asst Superintendent – Innovation Center</b>	248 Days	\$145,851	\$201,400
<b>Deputy Superintendent</b>	248 Days	\$175,819	\$242,798

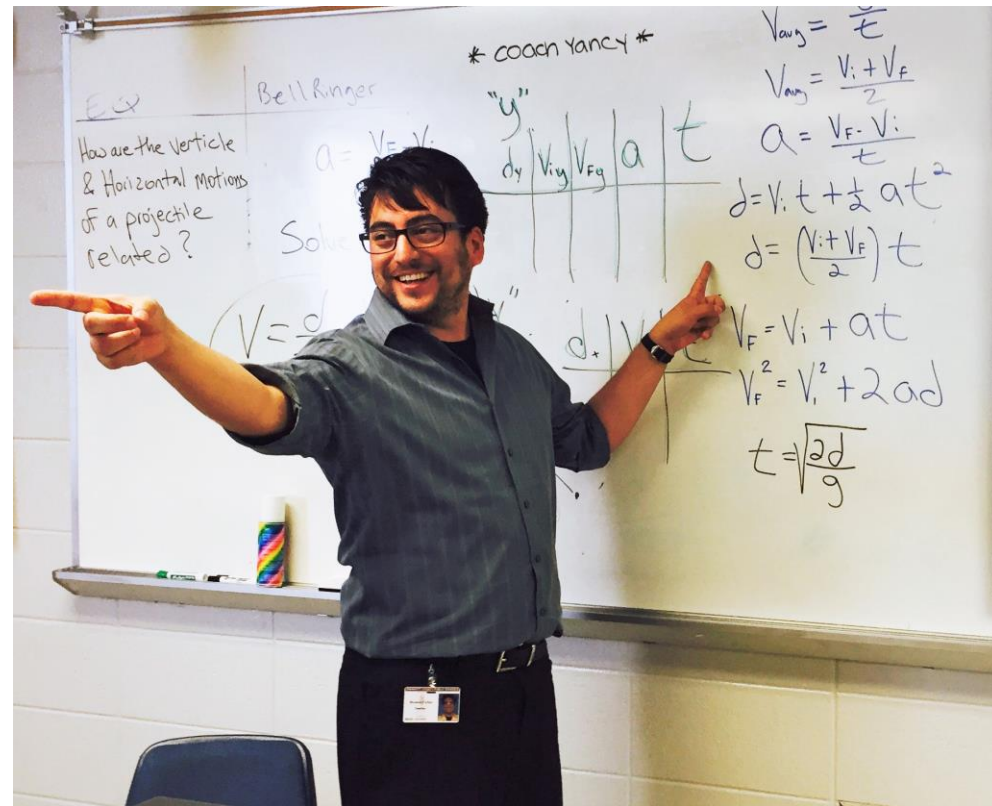
\* Classroom Teacher Calendar: 186 days

**Did you know...**

*There are **student loan forgiveness** programs and **scholarships** for math and science teachers.*

Federal loan forgiveness  
**\$17,500**

Colorado loan forgiveness  
of **\$5,000 per year** for up  
to **5 years**



**Did you know...**

*Most teaching jobs have **better retirement benefits** than other jobs you can get with the same degree.*

Teachers in the U.S. retire at **age 59** compared to age 63 for all occupations.





# Retirement Benefits

Colorado schools offer PERA retirement benefits



- Begin teaching at 22 years old, full retirement benefits at 57
  - 87.5% of highest annual income (e.g. a *pension*)
- Other jobs: Yearly Savings required (Annuity Value) of \$21,600

# Salary + Retirement Benefits

## Teaching vs. Industry

### Teaching

#### Salary + Retirement Benefits

(Pension value – 10.5% contribution)

- Year 1: \$50K + \$17K = **\$67K**
- Mid: \$100K + \$12K = **\$112K**

#### Other

- Fewer days on contract
- Better than average health insurance
- Retire in late 50's

### Lockheed Martin - ME

#### Salary + Retirement Benefits

(6-10% employer contribution)

- Year 1: \$67K + \$7K = **\$74K**
- Mid: \$96K + \$10K = **\$106K**

# Math and Science Teaching

# Student Interest

What fraction of U.S. students indicate some level of interest when asked:

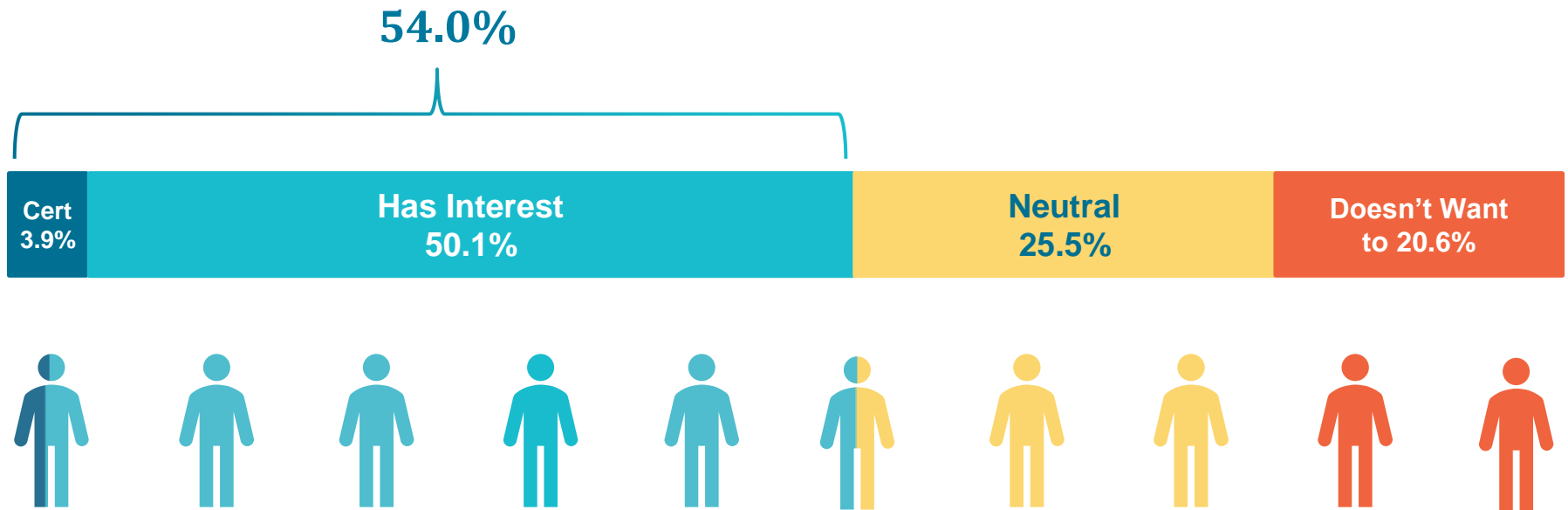
*How interested are you in being a middle or high school teacher?*

- A. 0% - 10%
- B. 10% - 25%
- C. 25% - 40%
- D. 40% - 60%
- E. >60%



# Pictogram of Prospective Teachers

**Pictogram of Prospective Teachers: 2020 Colorado School of Mines  
(n=793)**



# Math and Science Teaching

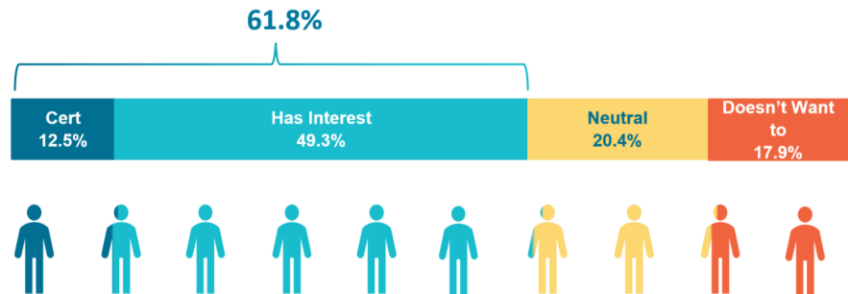
## Student Interest

Do you believe these diagrams will vary by race/ethnicity?

- A. No, the distribution of interest is likely consistent
- B. Yes, White STEM students are more interested in teaching compared to other groups
- C. Yes, White STEM students are less interested in teaching compared to other groups



### Pictogram of Prospective Teachers (n=2358)



# Pictogram of Prospective Teachers

59.8%

2020 White (n=1531)



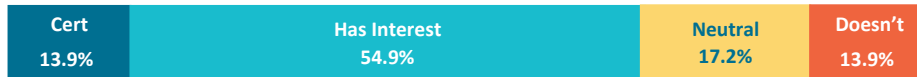
76.8%

2020 Hispanic (n=185)



68.9%

2020 Black (n=122)



69.6%

2020 Asian (n=148)

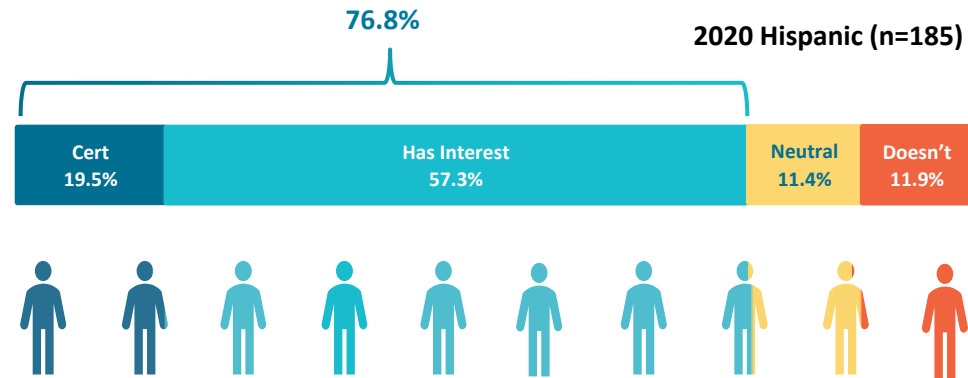


# Math and Science Teaching

## Student Interest

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- C. **Yes, White STEM students are less interested in teaching compared to other groups**



# Summary of Teacher Benefits

- *Teachers in the United States rate their lives better than all other occupation groups, trailing only physicians.*
- Starting pay ~\$50K (9-month, base salary)
- Mid-career pay Denver area \$85K - \$115K (9-month, base salary)
- Retire < 60 years-old w/ pension (87.5% HEI)
- There are **student loan forgiveness** programs for math and science teachers.
- You can get a **job almost anywhere** in the **U.S. or abroad** as a science or math teacher.



**Did you  
know...**

*Behind every advance in medicine or  
technology is a teacher who left a  
lasting impression.*



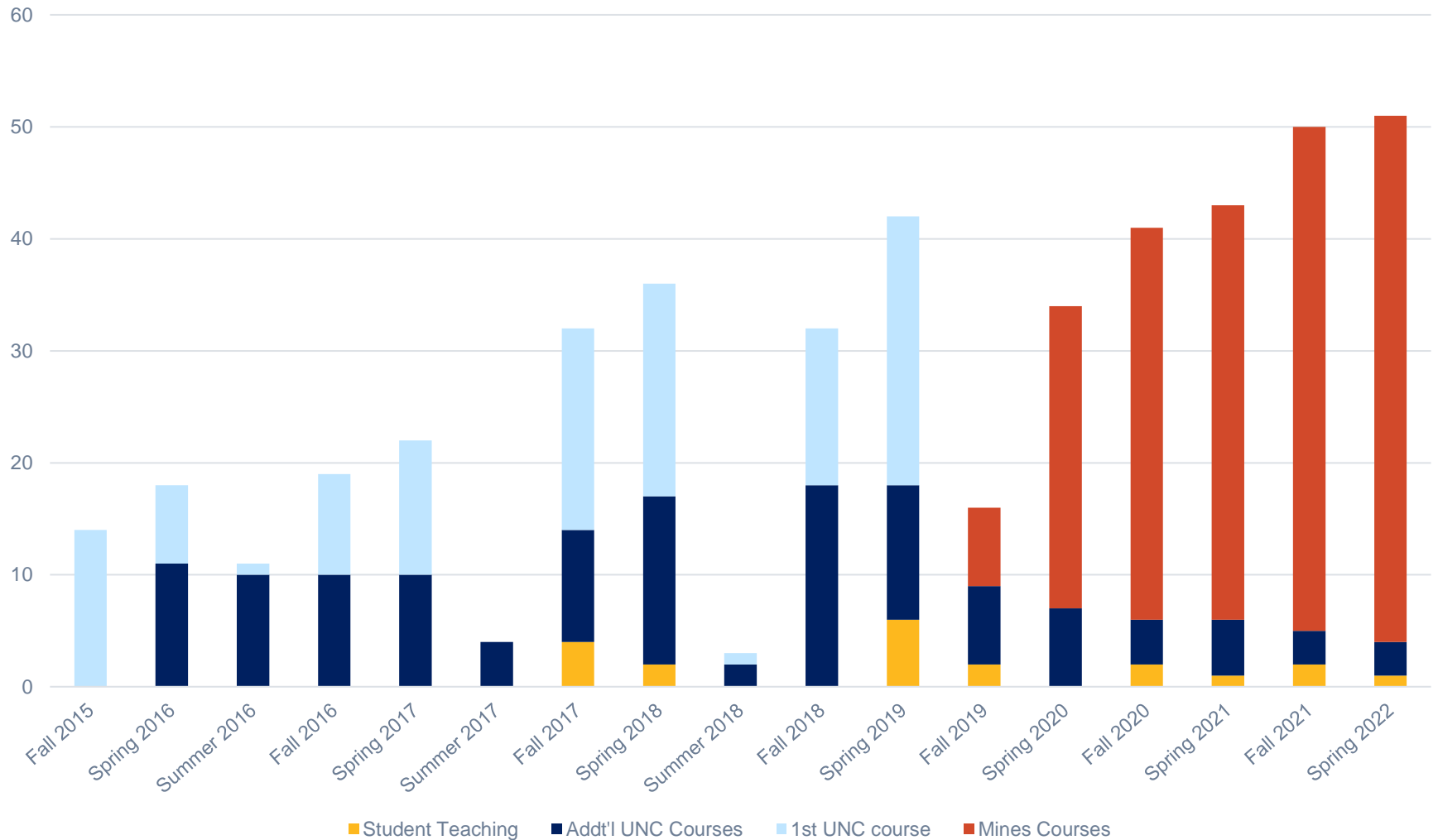
# Teach@Mines

- ✓ In our 7<sup>th</sup> Year of offering pathways for Mines students to teach.
- ✓ 3<sup>rd</sup> year of offering courses at Mines!
- ✓ 1<sup>st</sup> year of the Minor in Teaching and BSE w/ STEM Teaching focus area

## Current Stats:

- 165 students have taken courses at Mines
  - 23 in K-12 Field Experience this spring, 47 total taking courses this term
  - 45 have taken 2+ courses in the program
- 547 students on the active interested student list

# Mines Students in Teacher Prep Coursework



# Impact

## 2015-2022

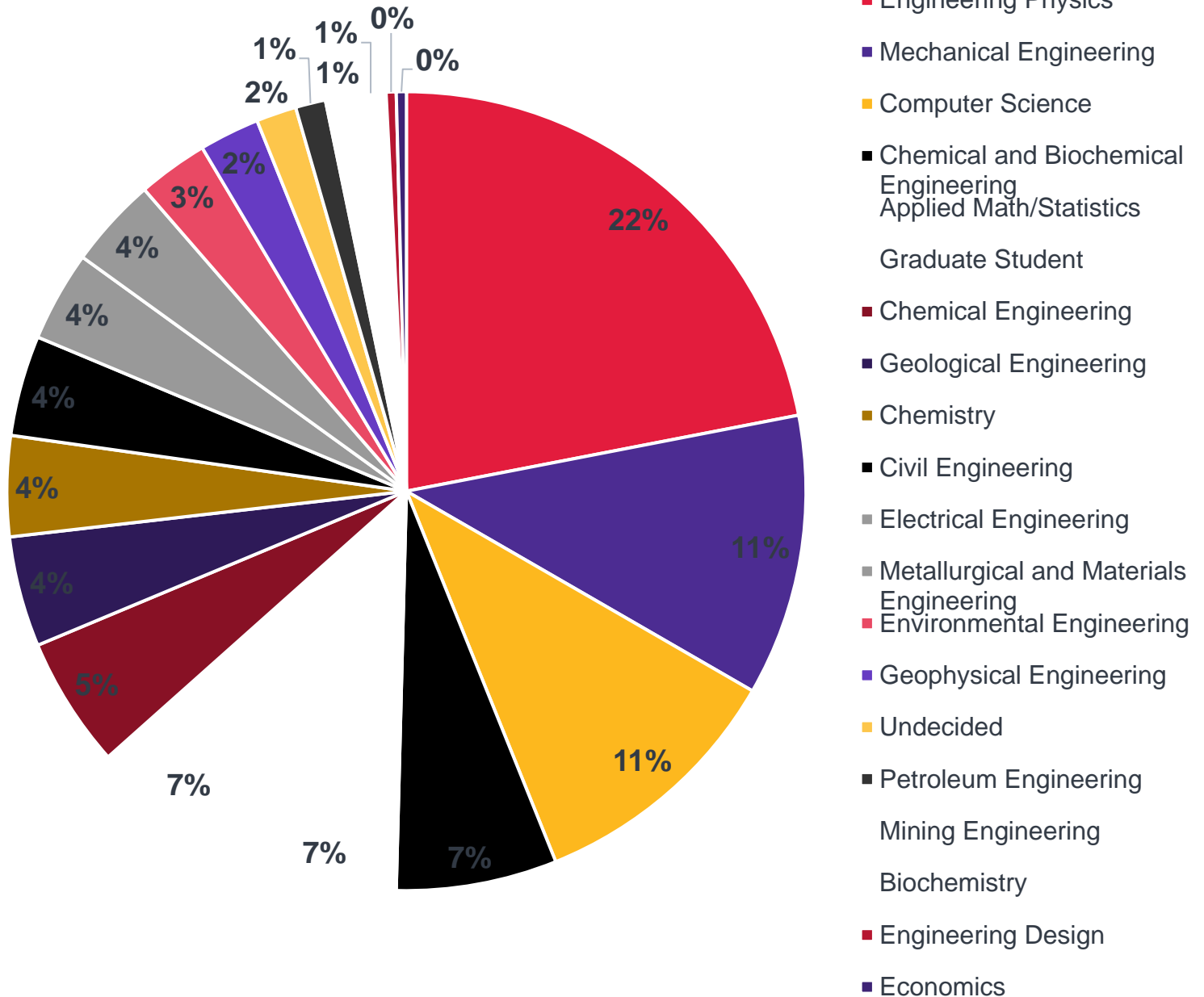
- 285 Mines students engaged
- 281 K-12 classrooms
- 12,450 Colorado K-12 students
- 25,570 Hours that Mines students worked with Colorado students
- DAPT & TAG
  - ~70 area STEM teachers



# Students by degree program (246)

T@M  
Advisors

- Physics
- Chemistry
- Math
- CS



# Teach@Mines

## Strategic Plan

### Spring 2022

- Apply to CDE & CDHE for authorization to license Secondary Math, Middle School Math, and Science teachers as an undergraduate program via the Minor in Teaching and the BSE STEM Teaching Focus Area (24 credits)
- Graduate Council
  - Submit Non-Thesis Masters
  - Submit Graduate level courses (most can be cross listed with current undergraduate courses)
  - Submit Graduate Certificate (9 credits)

### Next Steps:

- Goal: Authorized by the State Summer/Early Fall '22
- Goal: Graduate program approved for Spring '23 catalog
  - Immediately apply to state for authorization for the graduate licensure
- Goal: Fall '22 admissions portal opened for non-thesis MS with licensure
- Spring '23 apply to CDE & CDHE for Computer Science Licensure

# Non-Thesis Masters

$$4 + 1 = 3$$

## BS + MS + Licensure

- 500-level versions of all coursework (24 credits)
- 6 credits electives
  - Content or teaching
- The only 1-year MS with licensure program in the state
- 4+1 option
- Can also be completed by practicing teachers

# **Licensure & Non-Thesis Masters**

## **Benefits to Mines**

- **Recruit new undergraduate students**
  - Allows a person to keep the idea of Teaching on the table
- **Increases retention**
  - Students stay to become a teacher
- **New Graduate student population**
  - The best Math, Science, & CS pathway in the state for career changers
- **Community engagement**
  - Populate Colorado Schools with Mines' Alum as teachers.  
No better ambassador to our university!



# Teach@Mines

## Culture:

A recent survey response to the question of, “Is there anything else related to Teach@Mines, that you’d like to share?”

*I do not like the negative associations with teaching at this school. Sometimes I feel discouraged and put down by my peers and even my counselor. I have heard that I am "**at the wrong school**" and "**should go into industry first**" after mentioning that I want to be a teacher, these kind of comments can make me embarrassed about my intended career path. Besides that I really like Field Experience and am still excited to pursue a career in education.*

# Licensure & Non-Thesis Masters Grant Opportunities

## Programs **with Licensure**

- Can apply for NSF Noyce Capacity Building grant ~\$200K to support advising, Teacher In Residence, Recruitment
- Can apply for NSF Noyce Scholarship Grant ~\$1.2M 40% supports program and 60% supports students via internships and scholarships
- Private donors have given small amounts for past 7 years ~\$10K but have suggested larger donations if a regular teacher licensure program is created.

# Teach@Mines Licensure

## Science, Math or Computer Science

- 18 credits – content currently in the Teaching Minor
- 6 additional credits of Capstone Curriculum Design (built into the BSE STEM Teaching Focus Area)

## Other Areas: Elementary, Business

- Continue to partner with ASPIRE at CU Denver

# Teach@Mines Licensure

## Science, Math or Computer Science

- SCED/MAED262 K-12 Field Experience (3 credits)
- SCED333 Educational Psychology (3 credits)
- SCED363 Dynamic Teaching (3 credits)
- Choose one of the following:
  - SCED415 Scientific Practices vs. Engineering Design (3 credits)
  - MAED405 The Social Context of Mathematics (3 credits)
- Choose one of the four Teaching Techniques courses:
  - Computer Science, Mathematics, Physical Science, or STEM Teaching (3 credits)
- SCED/MAED464 Practicum (3 credits)
- **SCED/MAED465 Student Teaching (6 credits)**

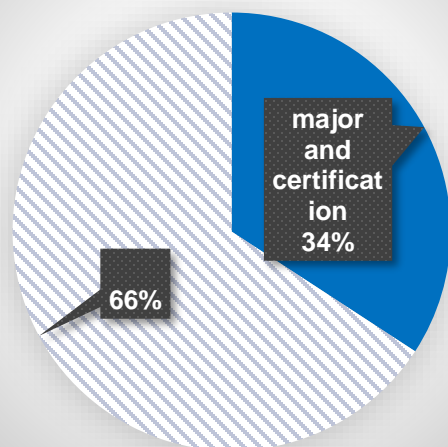
# Demographics of 20-21 cohort

20-21		
Male	23	40%
Female	34	60%
Caucasian or white	40	70%
Hispanic	8	14%
Asian	3	5%
Non-Resident Alien (International)	2	4%
Black or African American	1	2%
Multiple races	1	2%
Not Reported	1	2%
Unknown	1	2%

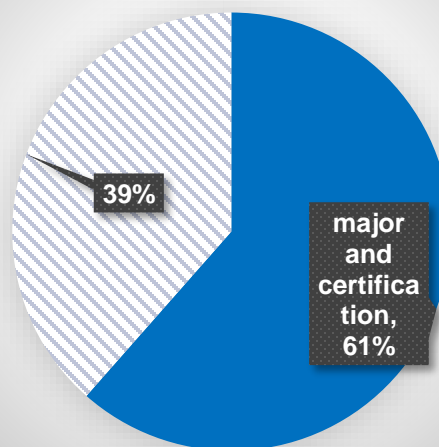


# The shortage of qualified teachers

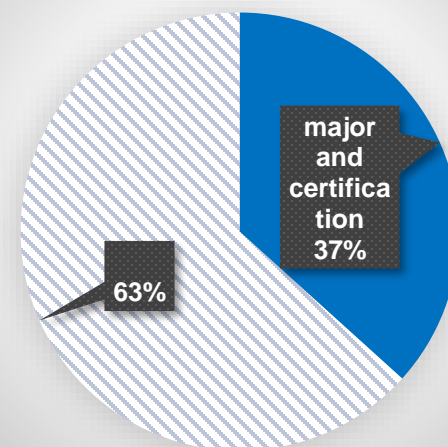
Chemistry



Mathematics



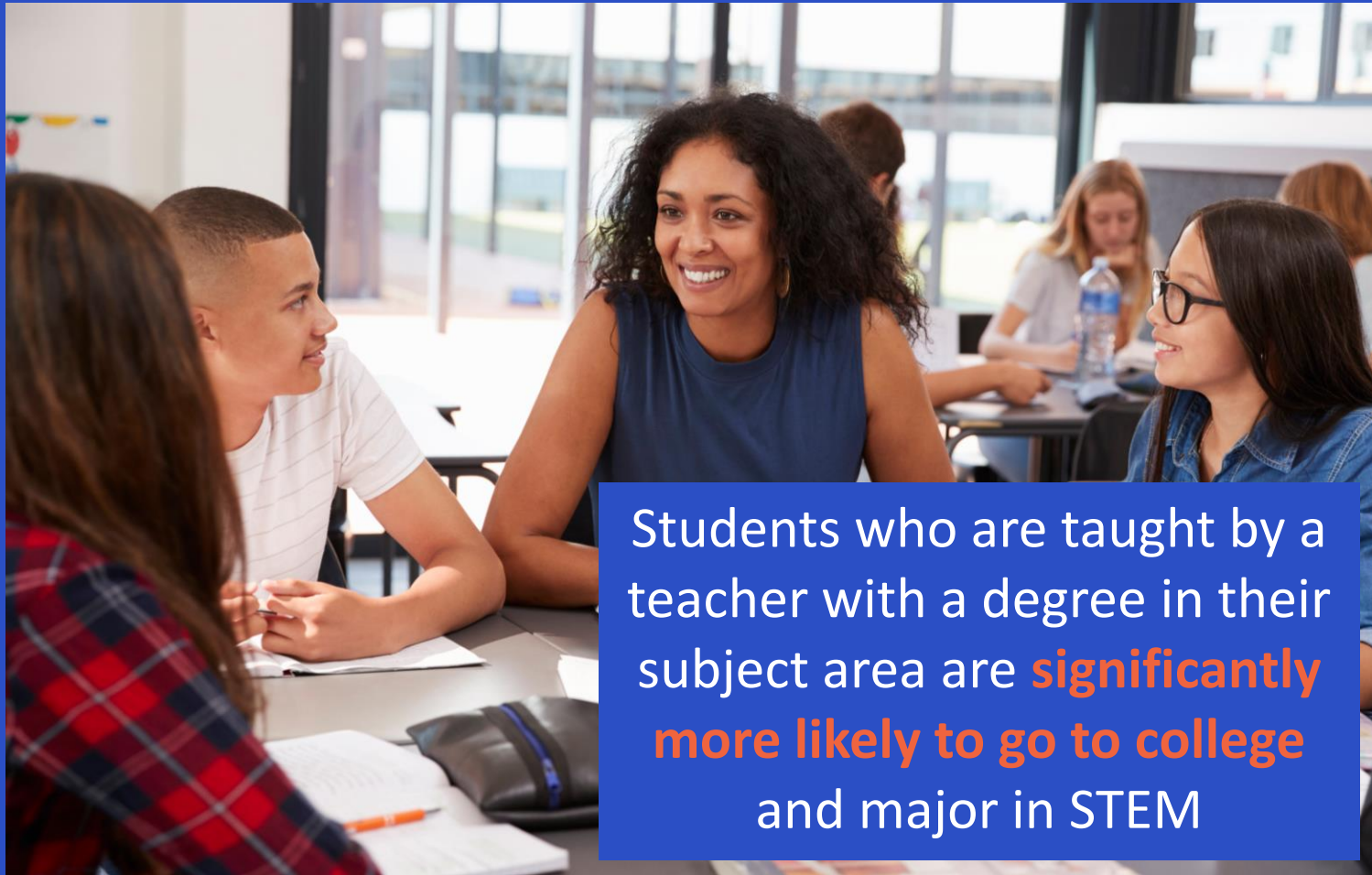
Physics



Public school teachers with a major in their main assignment  
and certification

(National Center for Education Statistics, 2011-2012 school year)

# Did you Know...



Students who are taught by a teacher with a degree in their subject area are **significantly more likely to go to college** and major in STEM

Get the  
Facts Out

