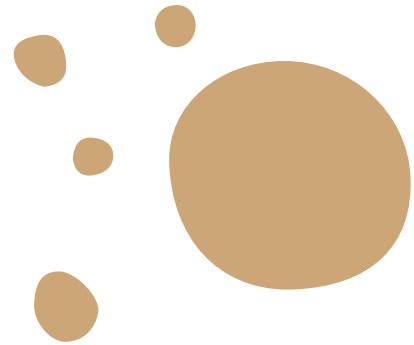




What impact does success in high school math have on a student's future careers?

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# Introduction




# PERSONAL STATEMENT

- Many STEM students and professions in the Silicon Valley
  - Correlations between STEM subjects and professions
  - Math as a sole indicator
- Will skills in math, the most fundamental of STEM subjects, have an impact on students' future careers?
- Research exists on this topic for 12th grade students only.



# PROBLEM STATEMENT

- New technologies are being invented and the importance of STEM education is also increasing simultaneously.
  - The most principal subject in STEM, math, now one of the most important subjects for students pursuing a STEM careers.
  - Currently some research conducted on the relations between high school math achievements and future professions.
  - Research have a sample group with limited age and population.
  - A research paper will be written to broaden the age group and expand the target population more domestically into the U.S.
- 



# Related researches

- Research on Finland students who successfully completed honor math courses were more likely to gain admissions to universities with a high rate of 80%
- Some research demonstrates positive correlations between likelihood of STEM professions and 12th grade math levels.
- Research from the Federal Reserve Bank of Cleveland
  - more likely to be employed
  - overall higher average wages.



# Literature Review

## High School Math Skill Correlation with College Success



## Impact of high school math on future professions



## Broadening the research scope

*Why Students Choose STEM Majors: Motivation, High School Learning, and Postsecondary Context of Support*

- Students with high math achievements in 12th grade->more likely to major STEM.

*The Relationship between High School Mathematical Achievement and Quantitative GPA*

- ACT math score, calculus, algebra II grades -> affects pre-engineering GPA significantly  
- Higher probability of earning a degree in desired field.

*Not Lack of Ability but More Choice. Psychological Science*

- 12th graders who had higher math skills were more likely to be enrolled in STEM careers after doing research on 1490 students.

*Bureau of Labor Statistics*

- Those who completed pre-algebra, algebra I-> \$12.70 per hour.  
- In contrast, dropouts with geometry or algebra II ->\$14.36.

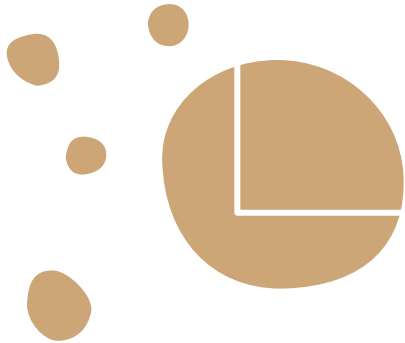
*Student's reasons for STEM choices and the relationship of mathematics choice to university admission*

- Effects of high school math to college admissions in Finland.  
- no data for the U.S.

*Not Lack of Ability but More Choice: Individual and Gender Differences in Choice of Careers in Science, Technology, Engineering, and Mathematics*

- data for 12th grade.  
- no data from 10 or 11th-grade math achievements.

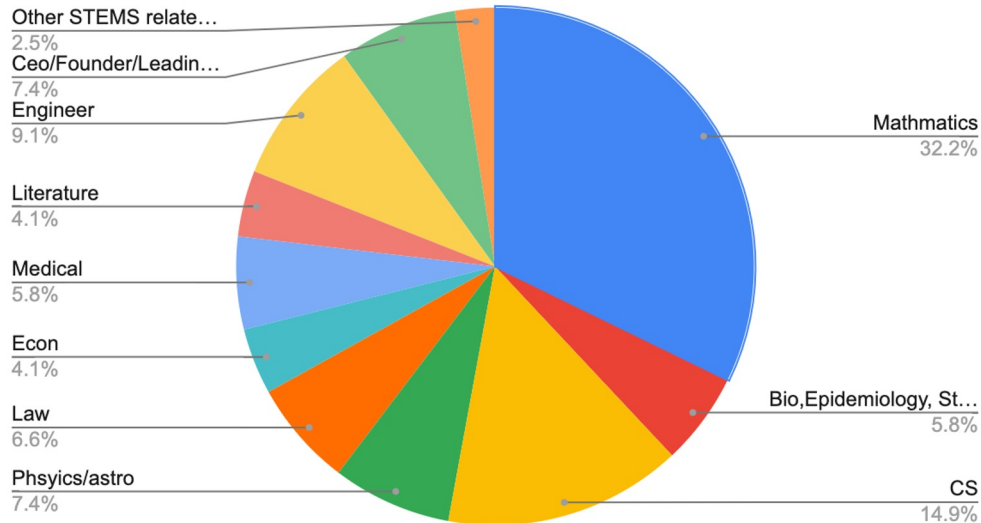
# Research & Methodologies





- Asking a renowned summer math program for tracked data of past alumni
  - Professions, companies
- Quantitative methods used
  - Which category of jobs was the most picked.
- Usage secondary sources
  - tracked data of alumni provided by math program
- Description approach used
  - Plan to analyze the percentage of STEM jobs present.

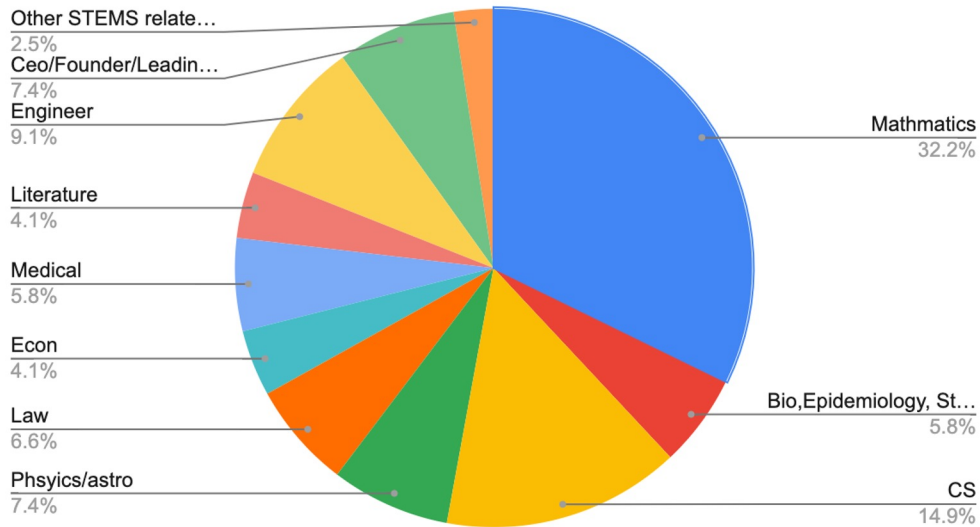
### Profession distributions



# Data & Analysis

# My Data

## Profession distributions



## Simple Observations

- Mathematics, computer science and engineering were the top professions
- Other STEM areas such as biology, epidemiology, statistics, physics and medics all had similar distributions of average of 6.2 percent. Not high relative to other STEM subjects.
- Other non-STEM areas
  - Law, literature with small proportion
  - Business exception

## Analysis

- If an individual is indeed skilled at math -> likelihood of acquiring a STEM-related career increases. These professions all heavily rely on theoretical knowledge of mathematics and not much on non-mathematical skills.
- 7.4% business ?:  
Businesses closely related to STEM areas such as research, climate change, education.

# Data Analysis(Cont)

- Computer science and engineering most heavily picked
  - STEM male students choosing computer science or engineering over other non-STEM subjects
  - similar pattern in *Not Lack of Ability but More Choice*.
    - Statistically, male students don't tend to be skilled enough at non-STEM subjects compared to female STEM students.
- Physics, astro, biology and epidemiology not highly picked.
  - Rely on non-mathematical STEM skills
- Skilled at math in high school -> higher medium wages?
  - Engineering and computer science were the top choices
  - Engineerists and computer scientists on average have higher salaries compared to literature or research scientists.
- One vague category: "math"
  - Made up of math professors at colleges or mathematicians working in research facilities or math organizations.
  - Medium wages of these professions differ for each college or research institution,
    - Hard to determine the effect of high school math skill on average wages

# Next Steps

- Provide relevant information to other families with children that are interested in STEM professions
- Students interested in CS or Engineering
  - Math is important!
- Students with interest in science
  - Don't necessarily need advanced math skills

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THANKS!  
QUESTIONS?

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