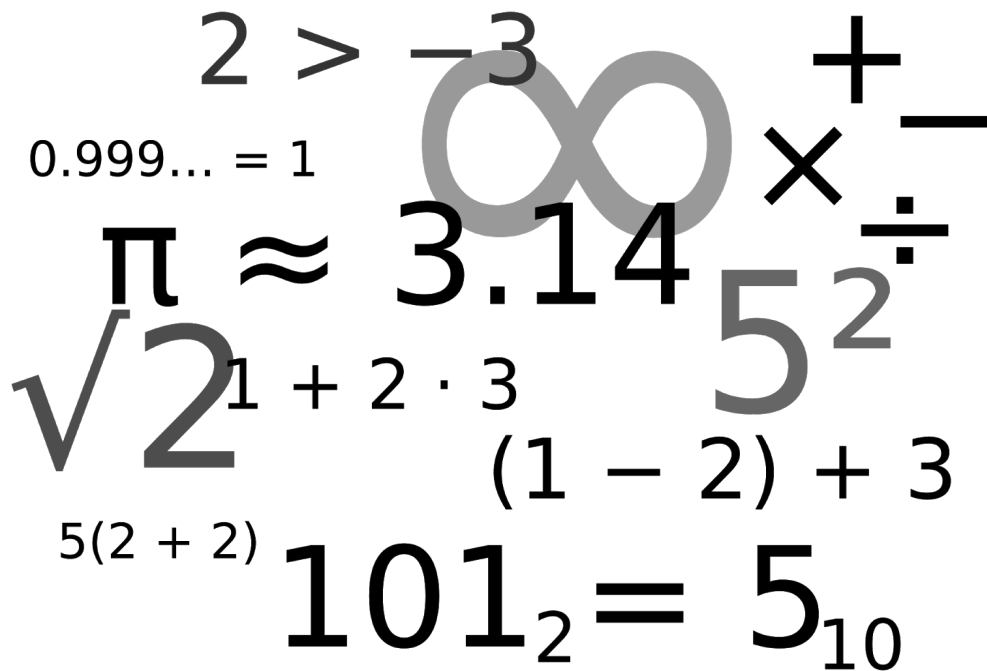# Claim: More Males Prefer Math than Females

Populations: Males to Females

Compiled by: Mrs. Michelle Gross

Date: April 20, 2018

$$2 > -3$$

$$0.999\ldots = 1$$

$$\infty \qquad + \quad -$$

$$\pi \approx 3.14 \qquad \times \quad \div$$

$$\sqrt{2} \quad 1 + 2 \cdot 3 \qquad 5^2$$

$$(1 - 2) + 3$$

$$5(2 + 2) \qquad 101_2 = 5_{10}$$

Intro:

My statistical question is do males really prefer math over females? My claim is that males do indeed prefer math. I have always read that males prefer math over females, but since I'm a female math teacher (who LOVES math by the way), I wanted to see if this is really true. My populations are middle school males to middle school females. I chose to focus on middle schoolers because that's the grade level I teach.

Sample:

My sample size for males was 41 and my sample size for females was 28. I did more convenience sampling because I created a survey and posted to our class' Padlet for volunteers to take. By doing this, there will be some biases. I didn't truly have random sampling because the majority of the responses were probably 7th graders in my math classes. Also because I put my name in the title of the survey, this could be a bias that impacts my overall results. My students may have responded differently to a survey about their favorite class knowing that it was my survey.
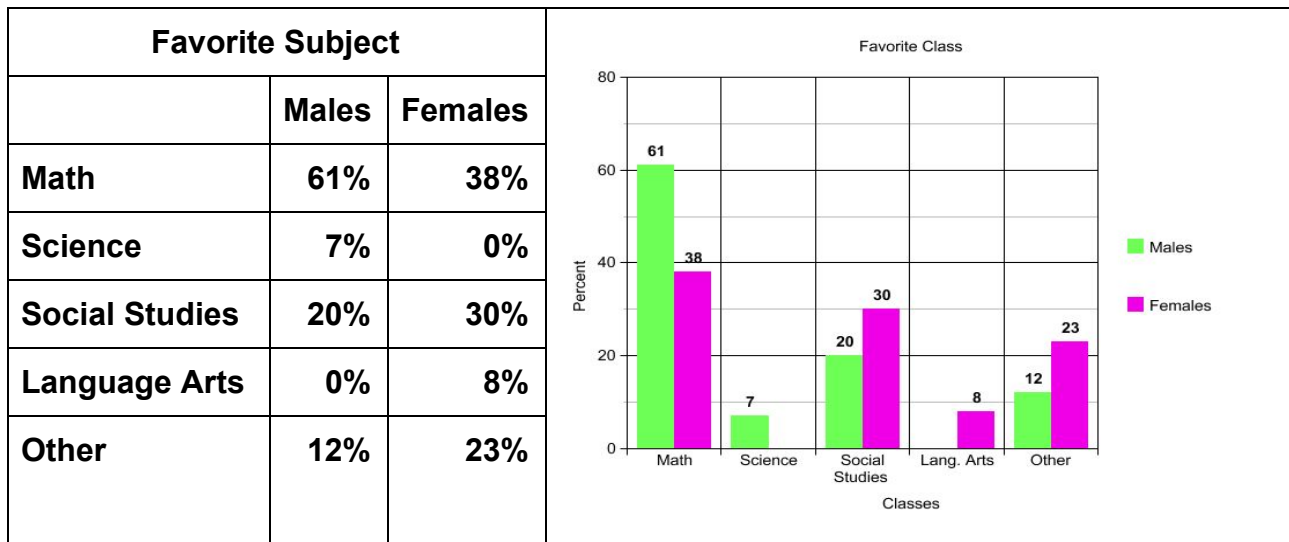
Populations Surveyed
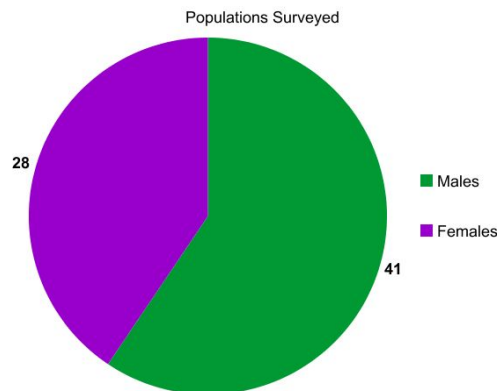
Survey:

   Survey Questions:
   1. Are you male or female?
   2. What is your favorite subject?
   3. On a scale of 1-5 how much do you like math?
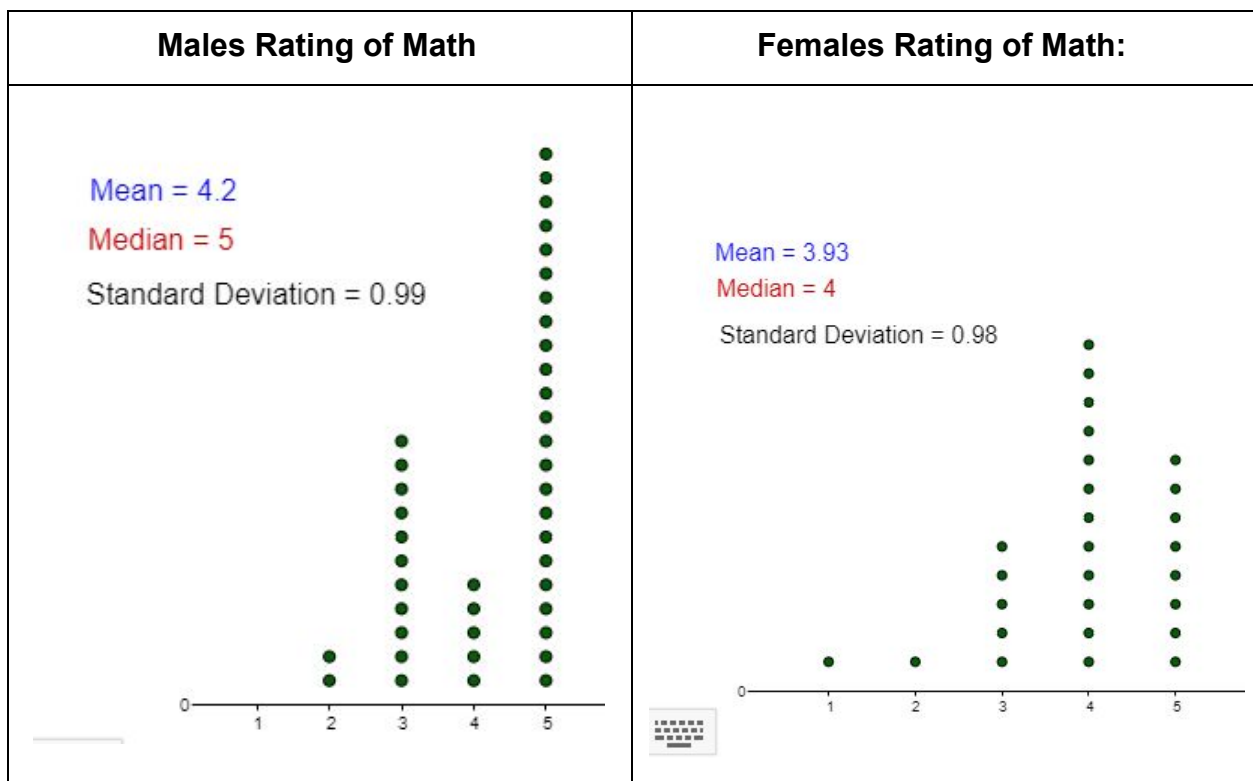   4. What do you think of math?

These questions help support my claim because not only am I asking my populations about their favorite subject to see if they prefer math, I'm also asking them to tell how much they enjoy math and use a numerical scale to rate math. My question about favorite subject could be biased because I only listed 4 classes (math, science, social studies. Language arts) and then put an 'other' category. If I had actually listed out art/music classes, my results may have been different.
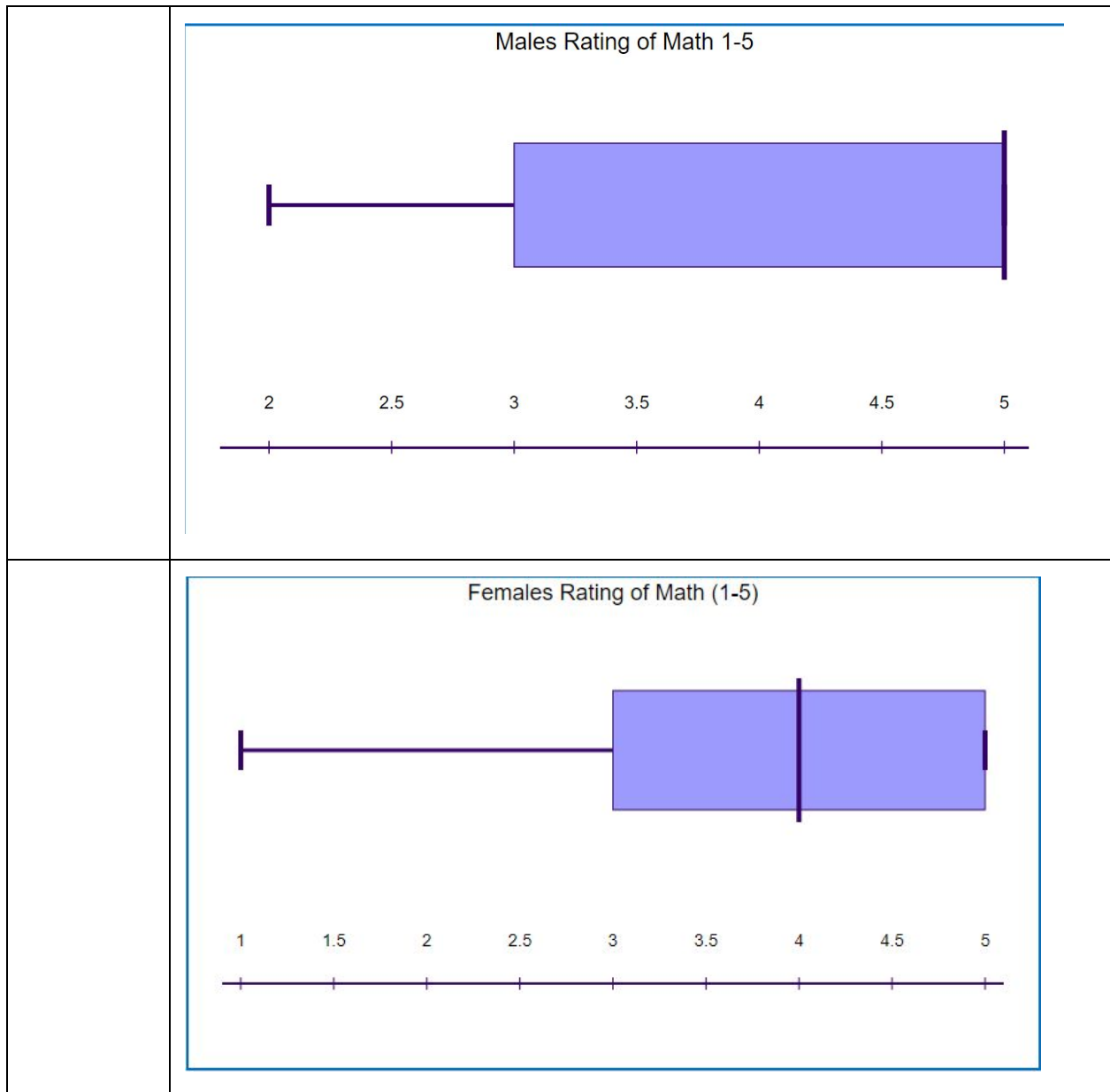
Analysis of Data:

Based on the data, my results show that males really do prefer math over females. The frequency table and comparative bar graph show that 61% of middle school males say that math is their favorite subject, while only 38% of middle school females say that math is their favorite subject.

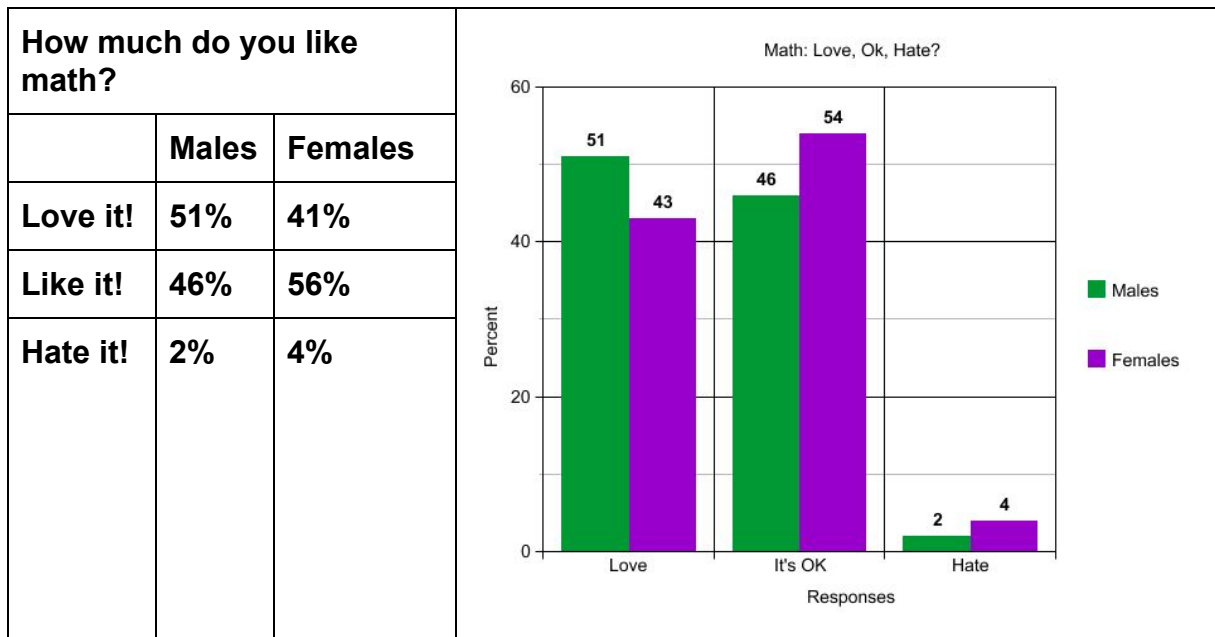| Favorite Subject		
	Males	**Females**
Math	61%	38%
Science	7%	0%
Social Studies	20%	30%
Language Arts	0%	8%
Other	12%	23%

Favorite Class

The two dot plots show how males and females rate math. The males mean of 4.2 is slightly higher than the females mean of 3.9. The median for males was 5, while the median for females was 4. This tells me that more than half of the males that took my survey rated math at the highest value. The mode for males was 5, while the mode for females was 4. The mean absolute deviation (MAD) for the males is 0.9 and the MAD for the females is 0.7. There was not much spread in my data.

Males Rating of Math	Females Rating of Math:
Mean = 4.2 Median = 5 Standard Deviation = 0.99	Mean = 3.93 Median = 4 Standard Deviation = 0.98

The two box-and-whisker plots show the spread of the data on how males and females rated math. As you can see, the males had no spread in data beyond the median since at least half the males rated math as 5. The interquartile range for the both the males and females is 2.

Males Rating of Math 1-5

| 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 |

Females Rating of Math (1-5)

| 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 |

Finally, I asked if students loved or hated math or if they were somewhere in the middle. This was similar to the rating scale, but I wanted to see the the results in categorical form. This shows me that 98% of my males either like or love math and 96% of my females either like or love math.

How much do you like math?		
	Males	Females
Love it!	51%	41%
Like it!	46%	56%
Hate it!	2%	4%

Math: Love, Ok, Hate?

(Bar chart — Percent vs Responses)

- Love: Males 51, Females 43
- It's OK: Males 46, Females 54
- Hate: Males 2, Females 4

Legend: Males (green), Females (purple)

There was enough data to support my claim that males prefer math to females. In every question I asked, the males preference for math was slightly to significantly higher than females. This especially was true for the question on favorite subject. That question shows that males prefer math over other subjects more often than females.

Generalizations: Overall, combining males and females, math is still the favorite subject with social studies coming in second. There were no outliers in my data that would have affected my overall results.

Conclusions: Based on the data, I learned that most of my students enjoy math. I originally thought that males would prefer math, but I didn't realize how much the majority likes math. I hope that they will continue their love of math throughout their lives.

Inferences: If I were to conduct this experiment across Kentucky or across the nation, I'm not sure I would get the same results. I do a lot of project based learning and make real-world connections with my students and I think that affects their enjoyment of the subject. If I went to a school where a lot of math was textbook or worksheet driven, I think I would see different results.

Reflection & Conclusion:

By conducting this statistics project, I learned a lot about the subjects my students like. They have expressed personally that they enjoy doing projects and hands-on learning. I've also noticed that they enjoy lessons with a purpose. When we did our Scale drawing project and had visitors come in, my students stepped up their game and did a great job on the project. Knowing that I'm presenting this project in Washington DC, I think my students saw more value and real-world connections to what they are learning. In turn, they enjoy math more than a typical student would.

I've also read that males need hands-on activities more than females. Because my classroom is mostly project-based (hands-on) learning, this even further proves my claim that my male students prefer math.

If I were to conduct this research again, I would compare sixth, seventh and eighth grade students and see if the results are similar or different. I would also like to compare students in my classroom who do project-based learning to a classroom where the math instruction is predominately lecture based with textbooks and worksheets being the primary work.

This project helped me learn more about creating different types of graphs, organizing my data and analyzing results. I learned more about measures of center and variability. The measures of center helped me to compare my males to females on the rating of math. The measures of variability helped me to see how spread out my data was. Typing up my results helped me to see what a research paper should look like. Research papers occur quite often in high school and college so this helps better prepare me.