

Methods:

Materials: Not Applicable

Procedure:

1. Choose 3 to 5 prestigious science fairs.
2. Find the winners of each year for the last 10 years.
3. Find the average income of the county their school is from during the year they won.
4. Record data and observations.

Variables:

Independent variable: The year the contestant won.

Dependent variable: The average income of the county where the science fair's winner came from.

Control: The average income of the United States that year.

- The control is the average income of the United States annually. This number is different each year, but it represents the same thing every time. I can't just compare the county income averages against one number because the average american income is different year by year, and I'm trying to see if it was higher than that average every year, even with economic growth or recession.

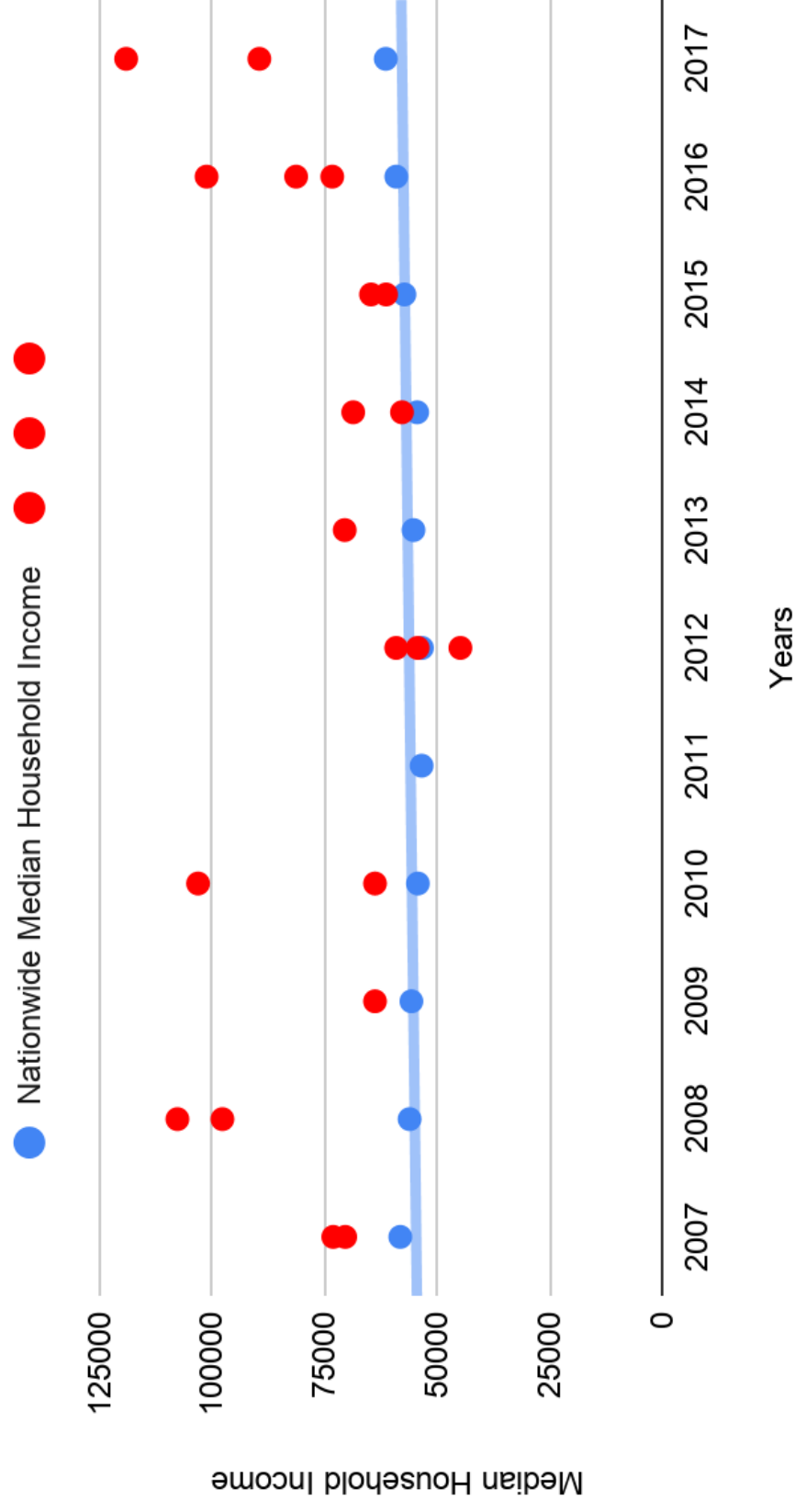
Background Research:

As of my time researching, I have yet to find any formal study on how income could affect science fair results. However, I have found similar studies that focused on test scores, and education opportunities as a whole. Jarod Apperson performed a study where he investigated areas in the United States with significant racial performance gaps as measured by the National Assessment of Educational Progress. He found that these locations also were also places where home income averages between races were very pronounced, with lower income households having lower test scores (AJC.com).

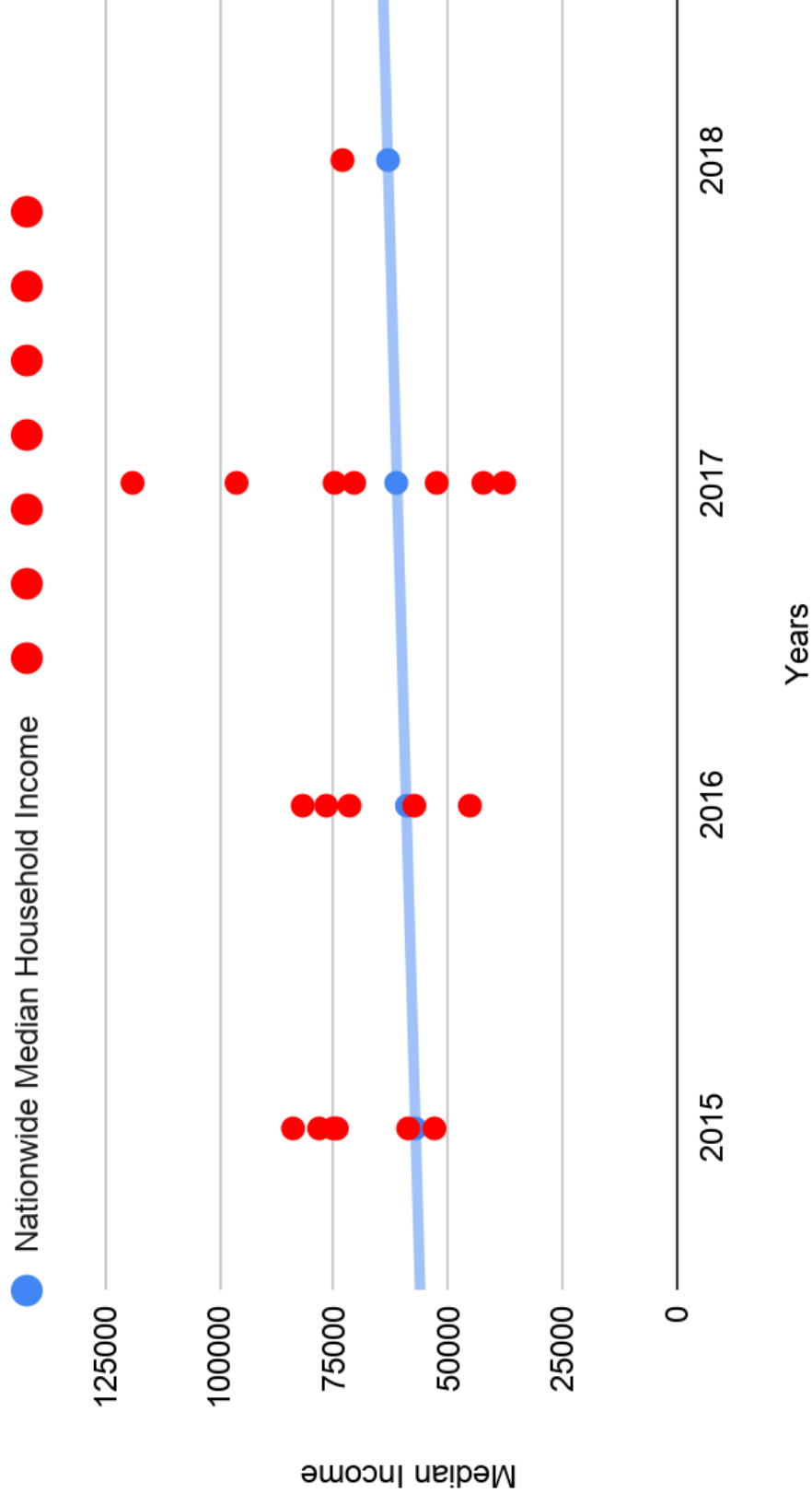
The reason why lower income correlates with lower testing scores is lack of opportunity due to monetary constraints. The American Psychological Association research on how Socioeconomic Status (SES) affects students. The data indicated that low-SES directly influences schooling in many ways, such as lack of funding to the school itself, less out of school educational opportunities, increased likelihood of learning behavior problems, and much more (APA.org). This relates to the science fair because having fewer opportunities to acquire outside support or going to a school with less funding, would put students at an inherent disadvantage when up against peers who did have those opportunities.

Despite finding plenty of evidence of SES affecting education opportunities, there were no studies that directly addressed how income could affect science fair results for high school students. I found a few articles which went into detail about parental involvement in science fairs, but they were addressing science fairs at an elementary school level. There is a notable lack of research on the topic of Socioeconomic Status in relation to the winners of not only prestigious science fairs, but high school level science fairs in general.

Davidson Fellows Top Scholarship Income



MIT THINK Finalist County Income



Think MIT Table:

Years	Nationwide Median Household Income							
2015	57,230	\$58,783	74,379	75,136	53,040	78,248	83,950	
2016	59,039	76,678	81,837	45,289	71,602	57,449		
2017	61,372	52,537	74,862	70,588	37,797	96,296	\$42,356	\$119,035
2018	63,179	\$73,142						

Davidson Fellows Top Scholarships Table

Years	Nationwide Median Household Income			
2007	\$58,149	70,379	\$73,039	
2008	56,076	\$107,648	\$97,652	
2009	55,683	\$63,763		
2010	54,245	\$63,763	\$103,059	
2011	53,401			
2012	53,331	\$59,061	\$54,305	\$44,796
2013	55,214	\$70,493		
2014	54,398	\$57,778	\$68,605	
2015	57,230	\$61,307	\$64,651	
2016	59,039	73,258	81,284	101,173
2017	61,372	\$89,451	\$119,035	

Data Analysis and Observations:

During the data collection process, there were several obstacles which prevented me from gathering data. Most science fairs or similar organizations don't keep track of their winners. Also, many of these fairs are international, which couldn't be used for this project since . Of the data I was able to collect, it seems to prove my hypothesis correct. The vast majority of the winners and finalists were from counties whose median household income was above the nationwide median. The pattern is especially pronounced in the case of the Davidson Fellows, but is still pronounced in the THINK MIT data set as well.

Conclusion:

I wasn't able to do the experiment exactly as I planned, but the data I gathered supported my hypothesis. There is definitely a correlation between median household income in a county and they likelihood to win in science fairs (and similar competitions). However, I'd love to continue this project further and gather further data. If I were to continue, I'd definitely address the International Science and Engineering Fair because it was what initially inspired me to do this project, but also because it deserves much more in-depth analysis since it has contestants from many countries. I would also want to find more data from actual science fairs, and compare state science fair attendance rates to see if the difference in median income also affects that. Overall, I think that the data I gathered was a good start and indicates a trend, but

continued data collection and analysis would be needed to make a strong conclusive claim.

Testable Question: Does income inequality affect who wins prestigious science fairs in the United States?

Hypothesis: Winners from prestigious science fairs will then, on average, be from schools in areas with higher average income.

Bibliography:

“Education and Socioeconomic Status.” American Psychological Association, American Psychological Association, 2017, www.apa.org/pi/ses/resources/publications/education.

Marcus, Jon, et al. “Are Science Fairs Unfair?” The Hechinger Report, 26 Mar. 2019, hechingerreport.org/are-science-fairs-unfair/.

Schank, Hana. “Science Fairs Aren't So Fair.” The Atlantic, Atlantic Media Company, 12 Mar. 2015, www.theatlantic.com/education/archive/2015/03/why-science-fairs-arent-so-fair/387547/.

Tagami, Ty. “Follow the Money: the Story behind Test Scores on National Exam.” Ajc, The Atlanta Journal-Constitution, 13 Apr. 2018, www.ajc.com/news/local-education/follow-the-money-the-story-behind-test-scores-national-exam/916f10ZXT6ofxpPoDiVm9M/.

Links to websites:

<https://www.multip.com/us-median-income/table/by-year>

<https://www.thebalance.com/what-is-average-income-in-usa-family-household-history-3306189>

<https://www.googlesciencefair.com/competition/past-projects>

<https://datausa.io/>

<https://www.deptofnumbers.com/income/>

<https://www.census.gov/quickfacts/fact/table/US/PST045218>

<https://think.mit.edu/#currentwinners>

<http://www.davidsongifted.org/fellows-scholarship/past-fellows/2016>



**DAVIDSON
FELLOWS
SCHOLARSHIP**

The logo features the word "THINK" in a white, tall, thin, sans-serif font. Above the letter "I" are three short, yellow, radiating lines, resembling a stylized sun or a lightbulb, which adds a dynamic and creative feel to the text.

THINK

MIT-THINK SCHOLARS PROGRAM
BRINGING HIGH SCHOOL STUDENTS' IDEAS TO LIFE

Abstract: This project was designed to analyze data of winners from national science and academia related competitions, and compare the median average income of the county the winner came from with the median average income of the United States that year, for the purpose of observing a possible correlation between the two. The end result showed a clear correlation with winners generally coming from counties with above average income. This was observed by gathering data from government websites which recorded the median incomes of counties the winners came from, and referencing that with the national median income of that year. This project is important because this bias towards students from areas with higher income means that it becomes increasingly difficult for students from counties, essentially means you can pay to win competitions which are supposed to rely on innovation and resourcefulness.