Does free lunch for kindergarteners abolish the performance gap?

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1 Introduction

Does getting a free lunch for kindergarteners get rid of the performance gap between lower-income students and higher-income students? Free lunches have become fairly common in schools, especially in areas with higher poverty levels. There have been many research papers into whether schools that provide free lunches give academic benefits to those students. However, is getting a free lunch enough to completely close the performance gap? Typically, students perform better if "their own SES-background is higher"(van Ewjik, Sleegers 2009). However, it has been researched many times that free lunch boosts the performances of individual students. Thus, if there still is a gap where students who get free lunch perform worse than the students who do not get free lunch, then schools will be able to reallocate funds to further support lower-income students. This would allow for lower-income students to succeed on testing to the same degree as other students and allow for more opportunities to lower-income students.

2 Methodology

In the *star.dta*, there are 5,710 total students with data where 2743 of the students get free lunch. To test the relationship between the students with free lunch and those without, I created a new variable that summed together all of the test scores. There were four total test scores in different categories, so by adding them together, it tested their total performance rather than in just one specific subject in the first part. I then ran a linear regression with the total score as the dependent variable as I was testing how the total score changed when there was a difference in whether the student got free lunch. The free lunch is a binary indicator which means that the coefficient is the difference in the average test score between students with the free lunch and those without the lunch to test the research question. The regression also suggested if this was a statistically significant result.

I ran regressions between each individual subject and the free lunch to see if the results were different for different subjects as well. This was done using the same method of completing a linear regression with free lunch as the independent variable. The slope indicated the difference in test scores in the subject which is at one-fourth of the scale that the total score, so the difference in slope should be much smaller.

3 Results

This is the result of the linear regression run between the free lunch and the total scores.

Source	SS	df	MS	Number of obs	=	5,710
				F(1, 5708)	=	615.68
Model	9378160.44	1	9378160.44	Prob > F	=	0.0000
Residual	86944824.3	5,708	15232.0996	R-squared	=	0.0974
				Adj R-squared	=	0.0972
Total	96322984.8	5,709	16872.1291	Root MSE	=	123.42

totalscore	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
freelunch	-81.11575	3.269085	-24.81	0.000	-87.5244	-74.7071
_cons	1933.721	2.265798	853.44	0.000	1929.279	1938.163

Table 1: Linear regression between free lunch and total scores

The p-value for the linear regression is less than 0.05 which means that this is a statistically significant result. The coefficient for the free lunch students is about -81 points which means that on average, the students with free lunch do 81 points worse than those without it. This can be seen in the below histogram which displays the test scores of the students with and without the free lunch.

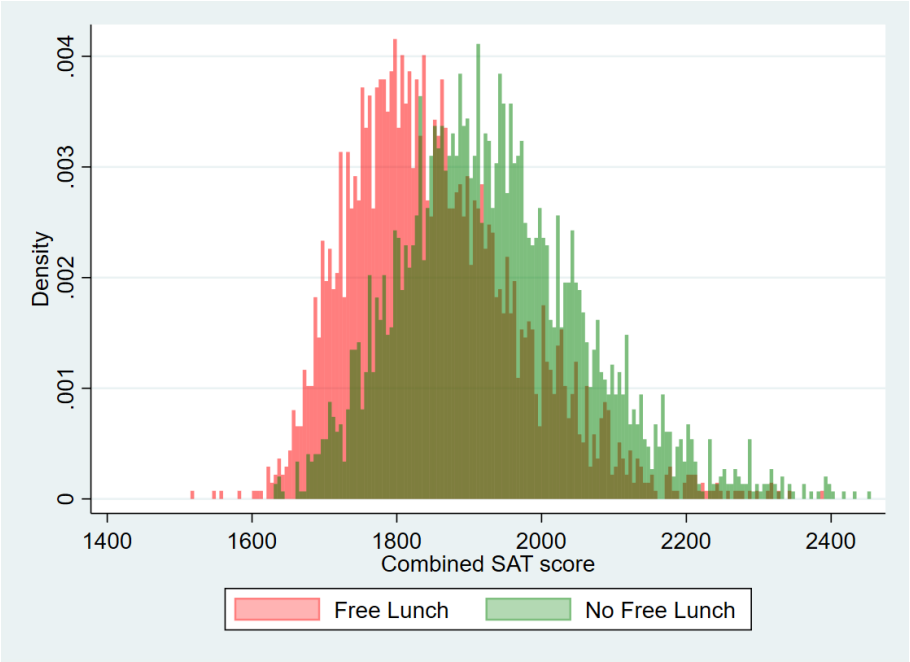

Figure 1: Histogram of students with and without free lunch

For the second part of the analysis, I looked at the trends for all four of the subjects and found that the correlation coefficients for math, reading, listening, and word skills are -23, -16, -22, and -19. All four of these were statistically significant with p-values of less than 0.05.

4 Conclusion

From these results, we can conclude that there is still a significant gap in the test scores between kids who get free lunches and those who don't. Receiving the free lunch is supposed to benefit the students who receive them so that they can learn better in school. However, it is evidently not doing enough as there is still a significant gap in the test scores. While it is hard to say exactly how to minimize the gap between students from lower-income families and higher-income families, it is important that we do more than just give those students free lunches. There is not a large difference between the individual subjects and the result, but the difference between the students in math was the largest.

5 Bibliography

van Ewijk, Reyn Joris and Sleegers, Peter, The Effect of Peer Socioeconomic Status on Student Achievement: A Meta-Analysis (April 1, 2009).