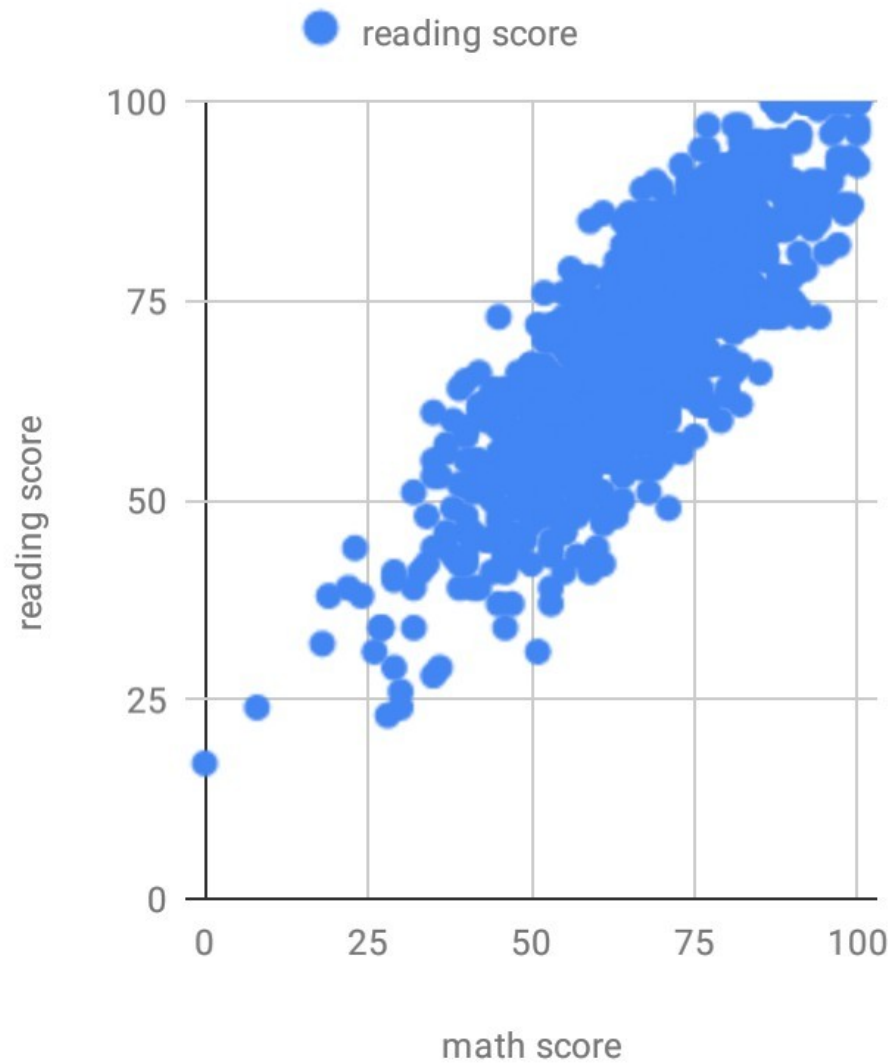After looking at the data set, my first instinct was to explore the data, I was able to come up with 8 different charts to have a better understanding of the whole data set. These are listed as follows:
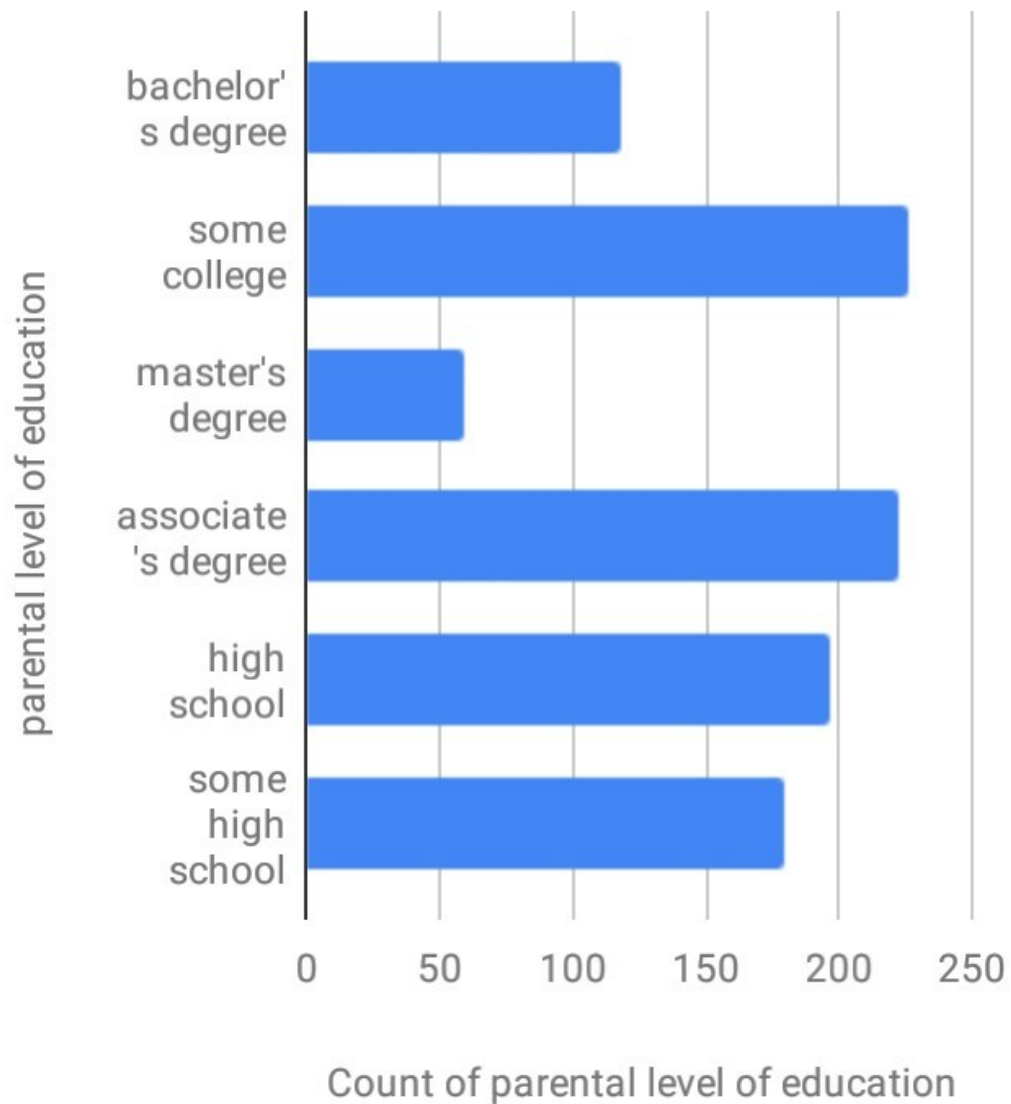
reading score vs. math score

For every increase of 100 in "math score", "reading score" increases by about 80.9.
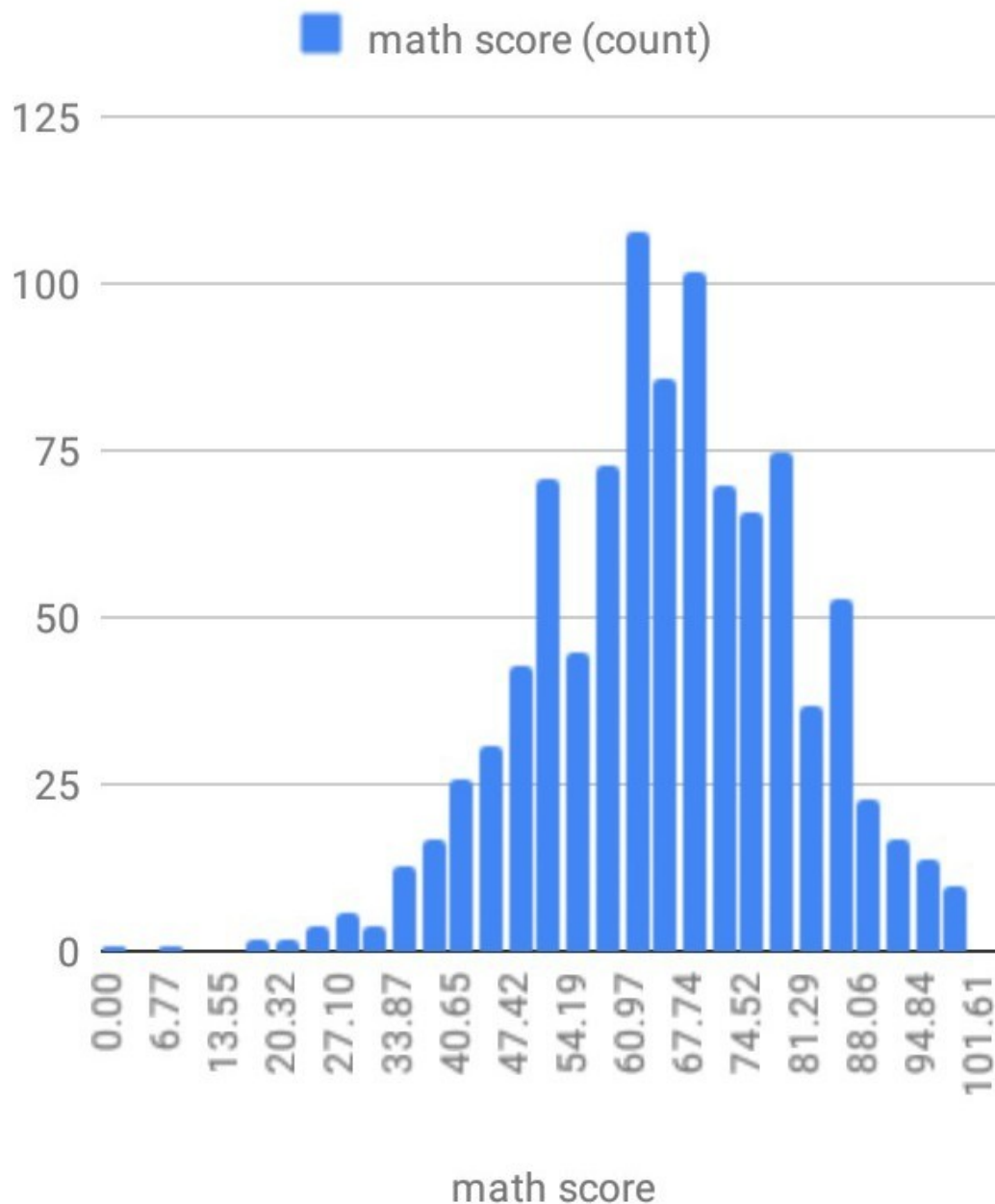
Count of parental level of education

"master's degree" has the lowest value for "parental level of education" (59).

Count of gender

● female ● male

Histogram of math score

Ranges from 0 to 100, but most values are around 66.1, plus or minus 12.9.

writing score vs. reading score
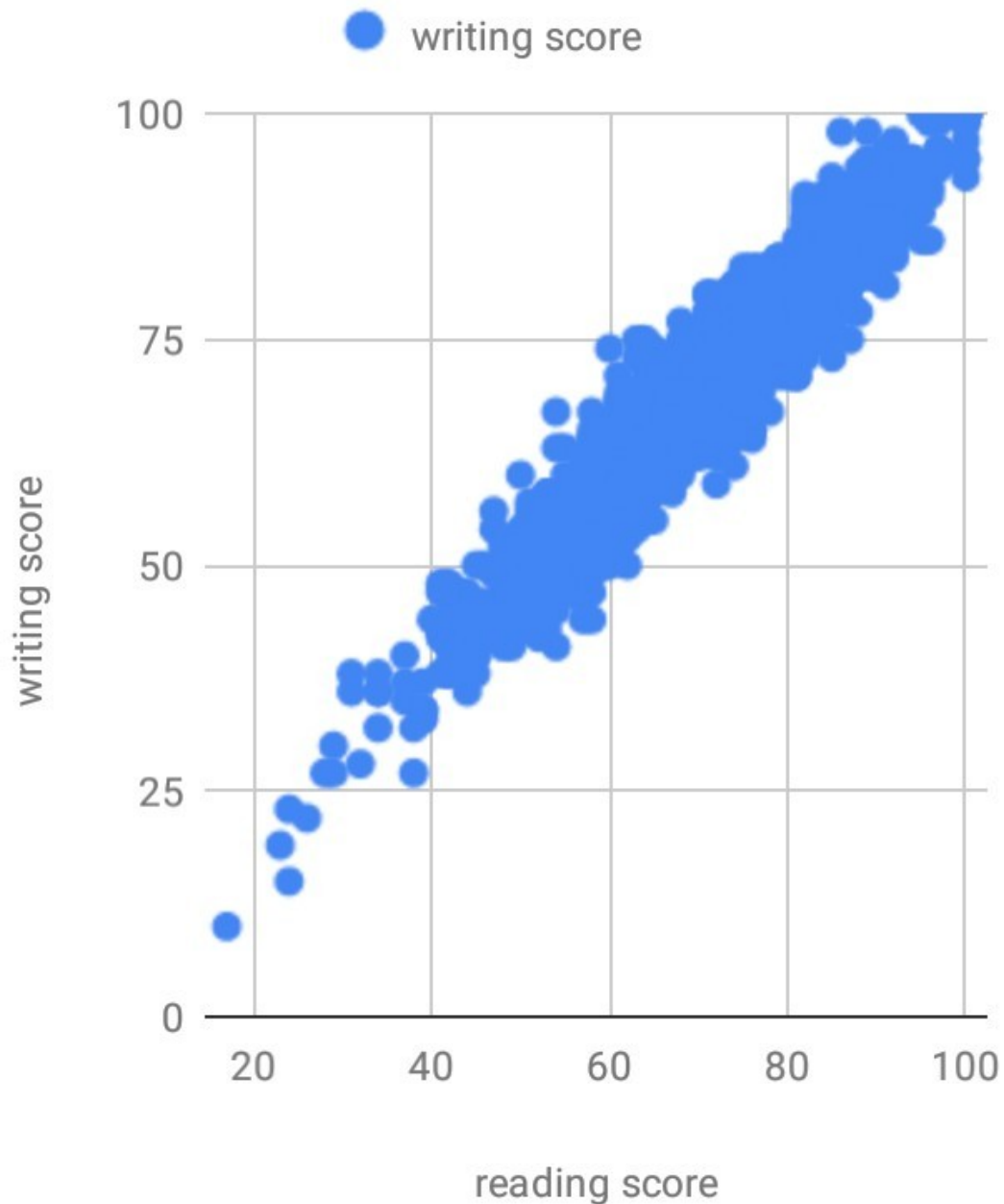
For every increase of 10 in "reading score", "writing score" increases by about 9.83.

Count of race/ethnicity
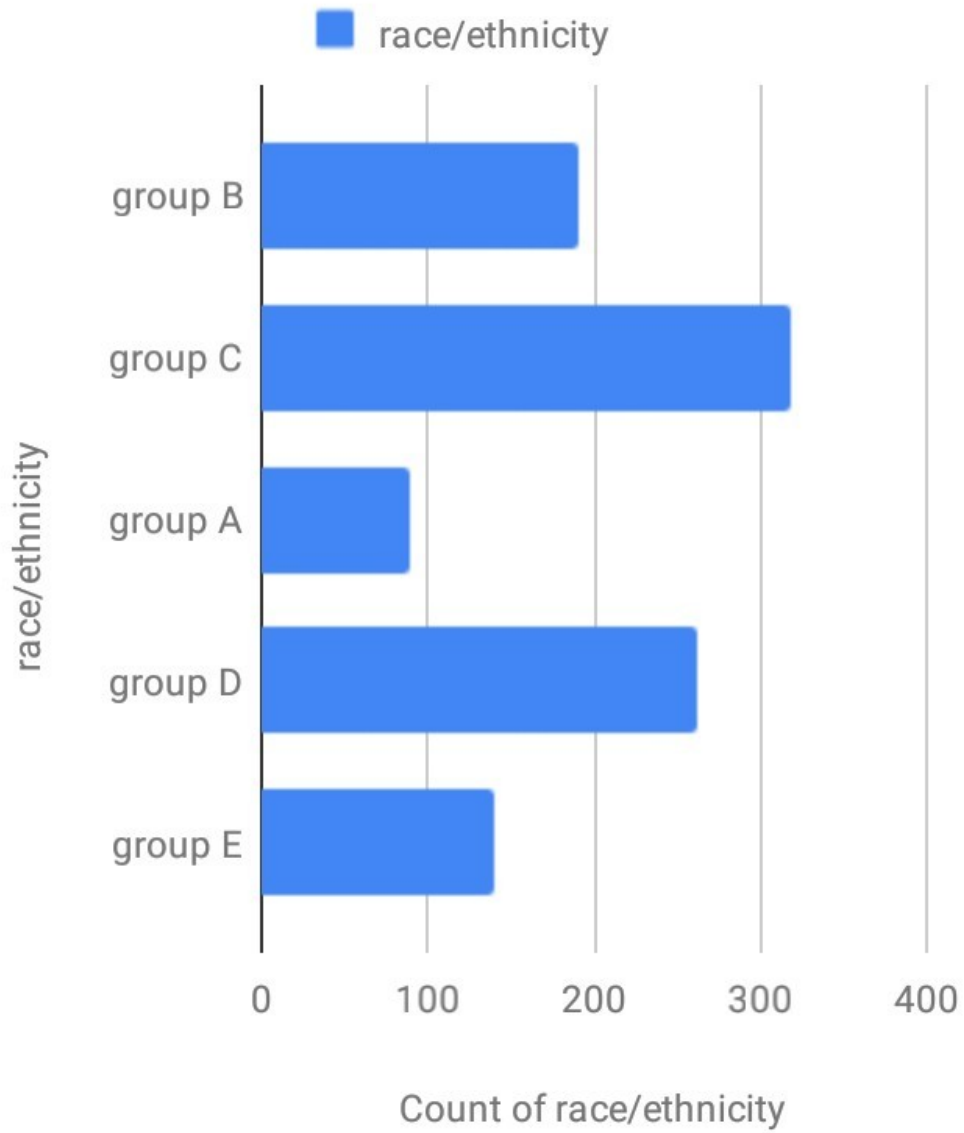
"group C" has the highest value for "race/ethnicity" (319).
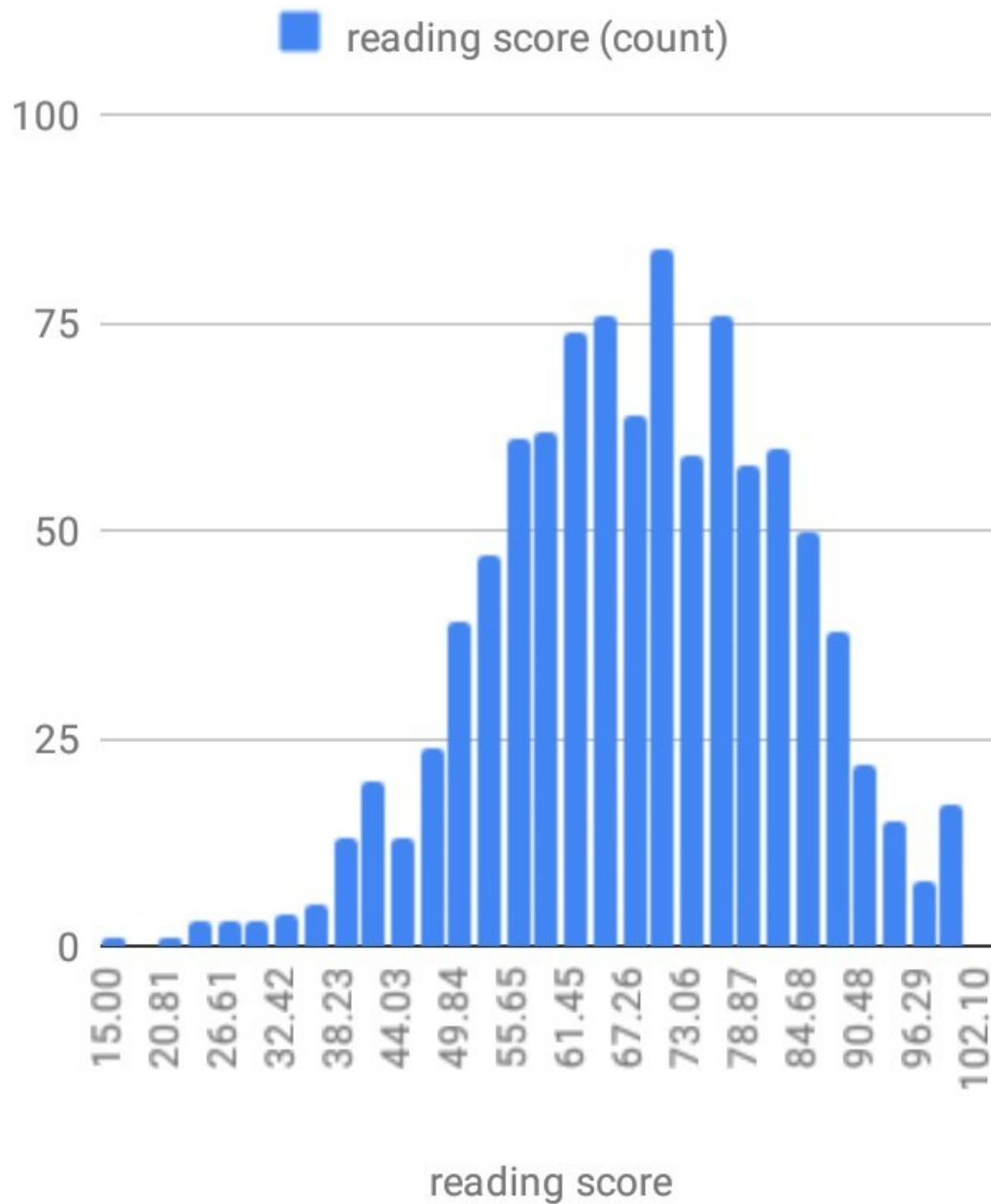
Count of lunch

- standard
- free/reduced

Histogram of reading score

Ranges from 17 to 100, but most values are around 69.2, plus or minus 12.8.

My understanding of the data set suggests that the data is from a pool of respondents which their test score was recorded and their personal characteristics were also collected.
So, it is expected that I compare their personal characteristics against the test score.
The test score is better explained in terms of the average for the 3 test categories, that's why I came up with a variable tagged average test score.

Variable (N =1000)	Frequency	Percentage (%)
Gender		
Male	482	48.2
Female	518	51.8
Parental level of Education		
Associate's degree	1	.1
Associate's degree	221	22.1
bachelor's degree	118	11.8
high school	196	19.6
master's degree	59	5.9
some college	226	22.6
some high school	179	17.9
Lunch		
free/reduced	355	35.5
standard	645	64.5
Test Preparation course		
completed	358	35.8
none	642	64.2

Five hundred and eighteen (51.8%) of the respondents were female while the rest 482 (48.2%) were males.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
math score	1000	0	100	66.09	15.163
reading score	1000	17	100	69.17	14.600
writing score	1000	10	100	68.05	15.196
Valid N (listwise)	1000				

The mean maths score was $66.09 \pm 15,163$ while the mean reading score was 69.17 ± 14.6.
This indicates that the respondents had a higher score in reading compared to the other subjects.

Group Statistics

	gender	N	Mean	Std. Deviation	Std. Error Mean
Average test score	male	482	65.8375	13.69884	.62397
	female	518	69.5695	14.54181	.63893

The average score of the males for the three test was 65.83 ± 13.7 while the females had an average test score of 69.6 ± 14.5, showing a higher score among females than males.

		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
	Equal variances not assumed			-4.179	997.847	.000	-5.48452	-1.97952

A T- test conducted to test for difference in the average test score between the males and the females showed that there was a statistically significant difference in the test score across gender (T= -4.179, P value <0.005).

The average test score was further analysed into two categories. Respondents with a test score between 0 and 49 were classified as failed while those with a score of 50 and above were regarded as having passed. The subsequent tables shows a proportion of the respondents that belongs to either category across different variables in the dataset.

gender * average test score category Crosstabulation

			average test score category		Total
			failed	passed	
gender	Female	Count	36	479	515
		% within gender	7.0%	93.0%	100.0%
	Male	Count	60	418	478
		% within gender	12.6%	87.4%	100.0%
Total		Count	96	897	993

Majority (479, 93.0%) of the female respondents passed while the rest (36, 7.0%) failed.

lunch * average test score category Crosstabulation

			average test score category		Total
			failed	passed	
lunch	free/reduced	Count	56	294	350
		% within lunch	16.0%	84.0%	100.0%
	standard	Count	40	603	643
		% within lunch	6.2%	93.8%	100.0%
Total		Count	96	897	993

test prep * average test score category Crosstabulation

			average test score category		Total
			failed	passed	
test prep	completed	Count	16	340	356
		% within test prep	4.5%	95.5%	100.0%
	none	Count	80	557	637
		% within test prep	12.6%	87.4%	100.0%
Total		Count	96	897	993

Multivariate Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.472[b]	.223	.219	12.59910

a. Predictors: (Constant), gender

b. Predictors: (Constant), gender, race/ethnicity, test prep, lunch, parental level of education

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	45283.178	5	9056.636	57.054	.000[c]
	Residual	157784.895	994	158.737		
	Total	203068.073	999			

a. Dependent Variable: Average test score

b. Predictors: (Constant), gender

c. Predictors: (Constant), gender, race/ethnicity, test prep, lunch, parental level of education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
2	(Constant)	53.130	2.392		22.209	.000	48.436	57.825
	gender	3.816	.798	.134	4.782	.000	2.250	5.382
	race/ethnicity	1.884	.346	.153	5.438	.000	1.204	2.563
	parental level of education	1.233	.226	.153	5.462	.000	.790	1.676
	lunch	-8.684	.834	-.292	-10.413	.000	-10.320	-7.047
	test prep	7.737	.831	.260	9.306	.000	6.105	9.368

a. Dependent Variable: Average test score

A multivariate regression model was used to analyse the relation between average test score and gender, race/ethnicity, test preparation, lunch and parental level of education. The model significantly predicted average test score though only 22.3% of the variability of the dependent variables could be explained by the model ($F_{(5, 994)} = 57.054$, P value<0.001, $R^2 = 22.3\%$).

The predicted model is as follows Average test score = 53.130 + 3.816 x gender + 1.884 x race/ethinicty + 1.223 x parental level of education – 8.684 x lunch + 7.737 x test preparation.

In conclusion, I deduced the following:

1. For every increase of 100 in maths score, there was an increase of about 80.9 in the reading score.

2. Master's degree has the lowest value for parental level of education (59).

3. There are more female (518) than male (482).

4. For every increase of 10 in reading score, there was an increase of about 9.83 in the writing score.

5. The range for the maths score was from 0 to 100, but most values were around 66.1 $\pm$ 12.9.

6. The highest race/ethnicity was group C (319).

7. Free/reduced lunch had more count than standard lunch.

8. The range for the reading score was from 17 to 100, but most values were around 69.2 $\pm$ 12.8.