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Memo 5

The impact of a student's socioeconomic status on academic achievement will be investigated in this study. Social class is determined by parental education, family income, and school poverty levels. Academic achievement is determined by a student's math scores and chance of continuing post-secondary education. The data for this study came from the Education Longitudinal Study of 2012, which included 10th students in 2002 and 12th graders in 2004.

According to the research, parental education appears to have a considerable impact on students' math results. Because the p value is less than 0.01 the relationship is statistically significant. Students' math scores rise in tandem with their parents' levels of education. According to table-1, children whose parents have a bachelor's degree or more have a ten-point advantage over students whose parents are high school dropouts. Students from better-income households also performed higher in math than students from lower-income families, as seen in Table 2. Table 3 reveals that students who attend schools with less than 50% free lunch boxes score 6 points better in math than students who attend schools with more. It demonstrates that children from higher social classes and schools with lower poverty levels perform better.

Table 4 shows that the majority of students have completed higher education. Even then, parents' education has a significant impact on their children's education. According to study, parents' education has a considerable impact on their children's postsecondary education. As shown in Table 4, nearly 95% of students whose parents have a BA or more have attended postgraduate school. Furthermore, students whose parents are high school dropouts have the lowest rate of postsecondary education attendance. In a nutshell, this table demonstrates that as parents' education levels rise, so do their children's chances of attending college.

Table-5 also demonstrates that students from lower-income families have a larger likelihood of not getting into college than students from higher-income families. Children from a

school that provides more than 50% free lunch boxes had a 10% lower likelihood of getting into college than students from a school that does not provide more than 50% free lunch boxes, according to table-6. As a result, school poverty has a statistical link to kids' chances of earning a graduate degree.

As per research, several elements have an impact on a student's education. It is concluded that students who originate from a wealthy family and who have parents with a higher education perform better in math and have a better likelihood of completing a postgraduate degree.

Table 1: Math Score by Parents Education 1 (anova)

```
              Df  Sum Sq Mean Sq F value Pr(>F)
parents_edu    3  159943   53314   596.6 <2e-16 ***
Residuals  15240 1361880      89
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
953 observations deleted due to missingness
```

Group.1 <chr>	x <dbl>
BA Graduated AND beyond	54.23043
High Droupout	44.14917
High School Graduate	47.24164
Some College	49.63244

Table 2: Math Score by Family Income (correlation- coefficient- test)

```
        Pearson's product-moment correlation

data:  Final_1$BYTXMSTD and Final_1$midpoint
t = 15.812, df = 11773, p-value < 2.2e-16
alternative hypothesis: true correlation is greater than 0
95 percent confidence interval:
 0.1293251 1.0000000
sample estimates:
      cor
0.1442014
```

Table 3: Math Score by School Poverty (anova)

```
                Df  Sum Sq Mean Sq F value Pr(>F)
highpovschool     1   69829   69829   750.8 <2e-16 ***
Residuals     14555 1353711      93
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
1640 observations deleted due to missingness
```

Group.1	x
<chr>	<dbl>
Not Over 50% Free Lunch	51.68696
Over 50% Free Lunch	45.48028

Table 4: Post Secondary Education by Parents Education

```
                          NO College    College
BA Graduated AND beyond  0.05152919 0.94847081
High Droupout            0.29624478 0.70375522
High School Graduate     0.24820296 0.75179704
Some College             0.13551060 0.86448940

        Pearson's Chi-squared test

data:  Final_1$parents_edu and Final_1$college
X-squared = 763.35, df = 3, p-value < 2.2e-16
```

Table 5: Post Secondary Education by Family income(anova)

```
              Df    Sum Sq   Mean Sq F value    Pr(>F)
college        1 4.733e+17 4.733e+17   49.32 2.32e-12 ***
Residuals   9953 9.552e+19 9.597e+15
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' '
6242 observations deleted due to missingness
```

Group.1 <chr>	x <dbl>
NO College	1313096
College	22676374

Table 6: Post Secondary Education by School Poverty

```
                          NO College   College
  Not Over 50% Free Lunch   0.1173776 0.8826224
  Over 50% Free Lunch       0.2194690 0.7805310

        Pearson's Chi-squared test with Yates' continuity correction

data:  Final_1$highpovschool and Final_1$college
X-squared = 132.18, df = 1, p-value < 2.2e-16
```