



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Sophia Santoso	Project Number S0421
Project Title What Effect Does Smartphone Usage Have on High School Students?	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective of this study is to evaluate the associations between smartphone usage and the well-being and academic performance of high school students. The null hypothesis is that excessive smartphone usage is negatively correlated with the academic performance and well-being of high school students.</p> <p>Methods A cross-sectional study was conducted by distributing a one-page, self-designed, anonymous questionnaire randomly during the month of December 2018 among 743 American high school students in Riverside, California. Participants were instructed to report demographic characteristics, the amount of time spent on their smartphone each day, the percentage of that time spent for each particular activity, a self-reported GPA for two years, and the user's perception of whether or not their smartphone use has a negative effect on academic achievement, sleep, stress, time for other activities, and general happiness. Responses were inputted manually into an Excel spreadsheet. By using an exclusion criteria, poor data were excluded from the statistical analysis. Regression analysis was conducted comparing multiple variables.</p> <p>Results This study has found a strong positive correlation between the amount of time spent on the smartphone and the time spent using social media. As time spent using social media increases, students are also more likely to be unhappy. On average, social media is also the activity that high school students spend the most time on while using their smartphones. As the time spent on the smartphone increases, the amount of sleep and the average GPA decreases. No correlation was found between the time spent using social media and stress.</p> <p>Conclusions The strengths of the study include a large number of participants, strict exclusion criteria, well-represented demographics, and anonymous design. The results of my study reinforced my hypothesis, which predicted that excessive smartphone usage is negatively correlated with academic performance and well-being of high school students. The information obtained from this study can be used to inspire high school students, parents, and teachers to develop new ways of using smartphones wisely without prompting negative effects.</p>	
Summary Statement By using self-reported data from a large student population, I found that excessive smartphone usage is negatively correlated with the academic performance and well-being of high school students.	
Help Received I designed the project, collected and analyzed the data myself. A mathematics mentor helped me run a statistical regression analysis.	