



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Cameron Conner	Project Number J0904
Project Title Does Air Quality at Schools Near the Freeway Make the Grade?	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective is to determine if air quality is lower at schools near the freeway.</p> <p>Methods An air quality monitor was built using multiple gas sensors and a PM2.5 sensor on an Arduino and Raspberry Pi setup. Python code and Arduino sketches were written to collect data from the sensors. Air quality was tested at 15 local schools during peak traffic times and GPS coordinates collected at each location. The data was entered in Google Sheets and then imported to ArcGIS Online to create maps of the findings.</p> <p>Results The data showed the school closest to the freeway had the poorest overall air quality and was similar to the air quality data collected directly on the freeway. The data also demonstrated how the schools farthest from the freeway had higher air quality.</p> <p>Conclusions I built an air quality monitor to measure overall air quality and PM2.5 particulate matter at local schools. The data I collected was displayed on several maps showing the distance of each school from the freeway and the air quality measurements. My hypothesis that schools closest to the freeway would have the lowest air quality was correct. The data from my experiment shows a correlation between the location of a school, its proximity to the freeway and the overall air quality.</p>	
Summary Statement I built an air quality monitor to take measurements at local schools to see if proximity to freeways would impact air quality.	
Help Received I chose and designed the setup for my air quality monitor. I consulted my father when reading schematics. My parents drove me to the various locations where I collected data. I performed the experiments myself.	