



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Robin G. Lillie	Project Number J2214
Project Title How Hot Do Cars Get in Summer?	
Objectives/Goals My project was conducted to see how hot vehicles got in summer under different conditions such as with the windows rolled up, the front windows cracked an inch, with a sunshade, and parked in the shade. I also tested the exterior color and to see if the size of the airspace of the vehicle mattered.	
Abstract	
Methods/Materials The van was tested under different conditions: parked in the sun with the windows up, front windows cracked, sunshade, and parked in the shade. All tests were done on days over 100°F with digital thermometers. Every hour, from 7am to 10pm, inside and outside temperatures were recorded. To test the size of airspace the same method was used on a van, a car, and a truck. To test color, temperatures in five Honda Pilots, with different exterior colors, were taken simultaneously for 15 minutes all in the sun with the windows up.	
Results Results showed that the inside temperature was much hotter than the outside temperature in all cases in the direct sun. I graphed temperatures versus time using Microsoft Excel. The graphs showed there wasn't much difference in highest temperature readings for the van under all conditions in the sun. All the experiments passed 110°F inside the vehicle by noon and stayed above that until about 8pm. The different air space sizes of the truck, car and van did matter but not that much. The van, which had the largest air space, heated up slower but got just as hot overall. The exterior color of the vehicle did matter. Black was the hottest, while white was the coolest by about 12°F.	
Conclusions/Discussion Vehicles easily reach 130°F in the summer sun. Sunshades don't help to reduce the overall inside temperature, just how hot the dashboard gets. Cracking the windows didn't help keep the vehicle cool either. Parking in the shade made the biggest difference of all. A larger interior air space only slowed the heating process down. Results did confirm that exterior color made a difference, the black paint absorbs more heat than the white paint.	
Summary Statement I looked at how hot vehicles got in summer under various conditions and if exterior color or interior airspace made a difference.	
Help Received Dave Carr, Butte College Chemistry Department, let me borrow thermometers. Mr. Wittmeier, Wittmeier Auto Center, let me test different color Honda Pilots. Mom proofread my report, helped with designing the experiment, took a couple of readings when I was unavailable, and moved the vehicles.	