CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J1213

Project Title
Are Hybrid Cars Really Better for the Environment?

Abstract

Objectives/Goals
The purpose of this experiment is to find out which vehicle has a better effect on the environment for the geographical area of the Bay Area, a Toyota Prius Hybrid or a Toyota Corolla.

Methods/Materials
In this experiment, I will rent a Toyota Hybrid and a Toyota Corolla, and my parents will drive them in the Bay Area. I will record the results of the gas mileage on a piece of paper and later transfer the results onto graphs. I will also record how much each car needs to refuel and the cost of the fuel. I will take the two cars to a smog station and test them to find out how much emissions are produced by each car. I am using these two cars because they have similar engines and are made by the same manufacturer.

Results
The results were that the Toyota Prius Hybrid consumed less fuel. The gas mileage difference proved to be 40 for the Hybrid and 27 for the Corolla. This would result in a savings of 13 miles per gallon for the average driver in this geographical area. These test vehicles were also submitted to emission testing and it was found that neither vehicle emitted any significant difference in emissions. The Toyota Prius Hybrid consumed less fuel.

Conclusions/Discussion
A person who purchased a Prius and used it primarily in the city might have been able to achieve higher gas mileage because the motor shut off at stops. The Toyota Prius was advertised at a 51 miles per gallon city; however, if it were used primarily in the city, the number of miles might be limited so that the number of gallons of fuel would also be limited. If the Prius were used primarily highway, the gas mileage would drop and the Corolla's mileage would increase to an average mile per gallon equal to the Prius. This would result in minimal fuel savings for the Prius vs. the Corolla, as reflected on my test.

Summary Statement
Two similar vehicles differing in their final drive, one being a hybrid and one being an automatic transmission, were compared for their effects on the enviornment concerning gas mileage and emissions.

Help Received
Mother and Father drove the cars; Vehicles were smog checked at a California State Smog Station.