



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Taylor A. Anderson	Project Number S0302
Project Title Cell Phone vs. Headset in Relation to Reaction Time	
Objectives/Goals The Purpose of the experiment is to determine whether it was reasonable for California to pass a law requiring a hands-free cell phone headset for calls while driving a car.	
Abstract	
Methods/Materials Method for testing: Prerecord 4 questions on a recorder that resembles a cell phone. Perform a control drop with a yard stick with 100cm closer to the ceiling than the 0cm mark. (the subject must grab the ruler as quickly as possible. Put headset on subject. Press the play button on the message to trigger the question. During the person's response, drop the yard stick. Record their catching point on a form. Repeat for the second question. Take off the headset and instruct the person to hold the recorder like they would a cell phone, and have them press play when they are ready for the question. Repeat for questions 3 and 4. Materials: People to test (some needing a test sign sheet); A recorder with headphone jack and a speakerphone in the shape of a cell phone; An interactive message on a phone (in order to keep a consistent level of focus on the cell phone); A headset; A meter stick; A form to record data; A calculator for finding averages.	
Results When the drop was performed with the hands-free device, I found that the test subject dropped the ruler 37.7 cm average, and with the cell phone in hand, 45 cm average. When calculated, this equates to 26 milliseconds which on an average car travelling at 50 mph, means that it can stop approximately 25 feet earlier when the driver is using a headset rather than holding the cell phone while driving.	
Conclusions/Discussion I concluded that reaction time is improved using a hands free cell phone headset, compared to the traditional holding method. On average, the subjects reacted 26 milliseconds faster with the hands free cell phone device than if holding the cell phone, which equated to 25 feet less stopping distance needed for an average car that can stop in 141 feet traveling initially at 50mph. From my analysis of the data, the reason for this outcome was that the sensory, mechanical, and visual aspects of holding the cell phone were lessened, therefore allowing the brain to recognize and react to stimuli more quickly than without the hands free device, resulting in a decreased reaction time. Using a headset instead of holding a cell phone while driving a car really can improve reaction time.	
Summary Statement Using a headset can save lives when talking on a cell phone.	
Help Received none	