

Greater San Diego Science and Engineering Fair

2015 PROJECT SUMMARY

Name: Lee, Rudy Kyung Jae **Grade:** 8 **School:** Marshall Middle School **Teacher:** E. Gillum

Project Title: Mult-tasking while driving. Who is the least distracted?

Abstract

Objectives/Goals

The goal of the experiment is to determine which age group has the least and greatest efficient driving ability while multitasking. It will also be determined which distraction is the most difficult for subjects to complete while driving on a given simulated course?

Hypothesis

Based on the results of previous experiments, teens aged 16-18 are expected to be the most distracted. Seniors, aged over 50, will follow for most distracted. 19-30 year olds and adults 31-49 are hypothesized to be the least distracted. Female drivers will perform overall, better than the male drivers. Texting will be the hardest distraction to complete with high efficiency.

Methods/Materials

This project is about distracted driving with different age groups and genders. There were four groups that were tested: thirty teenagers aged 16-18, thirty 19-30 year olds, thirty adults aged 31-49, and thirty seniors aged 50+. All groups had fifteen male and fifteen female drivers. The goal of the experiment was to determine which age group among four has the lowest or the highest efficient driving ability when having to multitask. In addition, which distraction made it most difficult for subjects to drive a given course was determined. The materials that were used included a laptop, questionnaire, computer simulator program called "Driving Simulator 2013," and a wheel and pedal attachment. Each driver started by completing the questionnaire and then was given one practice lap to get used to the controls and the course. The subjects then drove the course twice with no distractions with the results recorded. The drivers then drove the same course, twice, while texting. Texts included having to answer questions such as: "What is your favorite color?" The drivers then drove the same course twice while eating/opening a bag of chips. Finally, the drivers drove the same course twice while listening to music. Data was collected for all laps and distractions. The efficiency ratio was calculated using time in seconds by the number of crashes and speed violations.

Results

Testing took about 15-20 minutes each driver to complete all of the driving simulations both with and without distractions. 19-30 year olds consistently had the highest efficiency for all the distractions. Teenagers placed second, followed by adults in third while the seniors scored the lowest. Male drivers had the highest efficiency with both no distractions and while texting. Female drivers drove the best with eating and listening to music distractions. Texting results did show that as the hardest distraction for all subjects to drive and perform.

Conclusions/Discussion

The hypothesis was somewhat supported by the results. Texting results supported that this was the greatest distraction of the three tested. The males had the highest efficiency scores in two of the categories while the females also scored the highest in two. Driving with distractions did increase the number of crashes and did lower the efficiency scores. No distracted driving would lead to a safer road for everyone.

Summary Statement

The purpose of this experiment was to determine the impact of distracted driving and which age group is able to drive with better efficiency while being distracted. The conclusions from testing 150 subjects in four age groups, evenly divided between males and females was that the group of 19-30 year olds were best able to complete the course with the fewest crashes while being distracted, while the senior group showed the lowest ability to multi-task while driving. However, even with high efficiency all groups had more crashes during the simulation that when they were tested with no distractions.

Help Received

My mom and pastor helped get subjects to test.