# CALIFORNIA STATE SCIENCE FAIR
# 2011 PROJECT SUMMARY

**Name(s)**

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**Project Number**

31855

**Project Title**

## Mind Blowing 3D: What Are the Side Effects of Watching 3D Stereo IMAX Movies?

**Abstract**

**Objectives/Goals**

The purpose of my experiment was to observe whether or not extended viewing of a 3D IMAX film causes any negative side effects. I chose to study levels of headache, eye strain, tiredness, dizziness and nausea.

**Methods/Materials**

I obtained permission from the management of my local theater (RAVE IMAX Cinema) to conduct a survey during one of the screenings of TRON Legacy. I prepared a survey form in advance that asked participants to rate their levels of discomfort in the categories named above on a scale of 1-10, 1 being no problem, 10 being maximum discomfort. The form also asked participants to enter their age, sex, and seating position, along with indicating at what point during the two hour screening they began to experience discomfort.

With the help of my parents, I distributed the survey before a screening of approx. 100 audience members, and collected 85 completed surveys. The gender breakdown was 50 males and 35 females. Average age was 32.35 years old.

I entered the data into the Apple Numbers spreadsheet application and created data tables and graphs of the results. These illustrations appear on this project board and are also included in my written report along with the master spreadsheet in my log book. The original survey forms are also included in a binder.

**Results**

Out of the five categories of discomfort, the one with the highest amount of problems was eye strain, reporting an average level of 2.24 out of 10. The least of the problems was nausea, with an average level of 1.14 out of 10. Contrary to what I had expected, the highest level of eye strain was reported in what is supposed to be the most comfortable area for 3D viewing, middle center (zone 8). The average level of eye strain discomfort for males was 2.18 compared to 2.22 for females.* (note that there were 40% more males in the audience)

**Conclusions/Discussion**

Based on these results, at worst, negative side effects were experienced by less than 23% of viewers. My conclusion: The extended 90 minute viewing period of 3D IMAX films is relatively safe and comfortable for the majority of people.

**Summary Statement**

To study and correlate any negative side effects such as headache, nausea, dizziness, and eye strain while watching 3D movies

**Help Received**

Father helped with photos. Manager of movie thater helped with coordinating audience survey

Preliminary