



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title
Paper or Plastic: Which Is Requested Most, More Cost Effective, More Durable, and Better for the Environment?

Abstract

Objectives/Goals
Our project was designed to determine which type of grocery bag was better for the environment, more cost effective, stronger, and requested the most, paper or plastic.

Methods/Materials
Research the environmental impact of plastic and paper bags.
Observe 100 customers from four different types of grocery stores.
(one supermarket chain, one organic grocery store, one discount grocery store and one privately owned grocery store) Determine the cost of each type of bag to the retailer from the store manager. Identify the average amount of weight comfortable for customers to carry in their bags to use as a starting weight for the tests. Test each bag, paper and plastic, from the four stores, ability to hold weights while hanging from a PVC pipe. Repeat the test on each bag five times and record the results.

Results
Paper bags were not as strong as the plastic bags. The average amount of weight held by the paper bags was 40.3 lbs. The exception was the discount grocery store paper bag; it did not have handles and held an average weight of 45.31 lbs. The organic grocery store plastic bags held the maximum weight of forty five pounds without breaking. The combined average weight plastic bags were able to hold was 45.7 lbs. The cost of the bags varied slightly at each of the stores, however plastic bags cost an average of 3.25 cents per bag and paper was 7 cents per bag. Of the 400 costumers observed 65.75 % preferred plastic, 30% preferred paper, 2.5 % had no preference and 2.75% preferred cloth.

Conclusions/Discussion
We determined that plastic bags preformed better than plastic. The amount of weight that each bag was able to hole did different from store to store. When it comes to the environment, they are both equally hazardous for the environment. Paper bags are harder on the environment to make than plastic; however they are easier to recycle than plastic. Our environmental research data lead us to the use of cloth bags. Two of the stores offered cloth bags to customers for \$1.00 each. So the answer to our question Paper or Plastic? is neither. The best thing to use at a grocery store is a cloth bag. They are the best option for our environment, they hold the most weight, they can be recycled and reused easier than paper or plastic.

Summary Statement
Our project was designed to determine which grocery bag is better, paper or plastic.

Help Received
Mom helped fill out the forms, get supplies, glue the board, provided transportation, supervision, and moral support.