CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

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Project Title

The Effects of Age, Gender, and the Plastic Bag Ban on Consumer Bag Choice at Santa Monica Grocery Stores

Abstract

Objectives/Goals

We aimed to determine the effects of age, gender, and the plastic bag ban (with 10 cent fee per paper bag) on consumer bag choice at Santa Monica grocery stores by comparing pre- and post-ban data.

Methods/Materials

Over two years, 50,400 patrons were visually observed exiting five grocery stores to estimate patrons' carryout bag type, age, and gender. Stores were separated into #regular# or "eco-friendly" categories based on whether plastic bags were predominantly used prior to the ban. Graphical and statistical analyses (MANOVA and T-tests) were used to test the null hypothesis: none of the variables would affect consumer bag choice between pre- and post-ban time periods.

Results

Comparing pre- and post-ban data for eco-friendly stores, the plastic bag ban eliminated the use of plastic bags (2% to 0%), decreased the use of paper bags (55% to 37%), and increased the use of reusable bags (23% to 47%) and no bags (19% to 21%). At regular grocery stores, the percentage of patrons using plastic bags decreased (69% to 0%), while the percentages using reusable, paper, and no bags all increased (10% to 41%, 5% to 23%, and 15% to 36%, respectively). The results also reveal that compared to younger generations, the oldest age group used more plastic bags pre-ban but more reusable bags post ban, while the youngest age category was most inclined to use no bag. Furthermore, at both eco-friendly and regular stores, a higher percentage of female patrons used reusable bags than male patrons, whereas males tended to use more paper bags and no bag than females.

Conclusions/Discussion

The city's plastic bag ban effectively eliminated plastic bags from all stores. Our data further suggest the ten cent fee was effective in encouraging reusable over paper bag use because paper bag use went down at eco-friendly stores while reusable and no bag usage went up at both eco- and regular stores. Given the plastic bag ban's main targets were the regular stores, there was thus a "spillover effect" at eco-friendly stores. While this study did not assess patron volume per store or the number of bags used per costumer, it is possible that the increased use of paper bags at regular stores is balanced by the decreased use of paper bags at eco-friendly stores. Moreover, our results suggest more educational outreach is needed for the 0-19 age group and males to encourage greater use of reusable bag and decreased use of paper bags.

Summary Statement

Over two years, we visually estimated the carryout bag type, age, and gender of 50,400 grocery store patrons to examine the effects of the City of Santa Monica's plastic bag ban (with ten cent fee per paper bag) on consumer bag choice.

Help Received

25 of our peers (science students) from Santa Monica High School assisted us in the collection of visual surveys. Dr. Tom Belin of UCLA provided guidance with statistical analyses.

Preliminary