

Question 19.1

Summary

I propose a three-step solution to this question.

1. Hypothesis Testing to test whether the given hypothesis are correct
2. Clustering to divide products into groups of complementary products
3. Optimization for grouped values

Description (general format)

1. Clustering

Given:

- a) market data on sales of individual data
- b) current storage space distribution (amount)

Use: Clustering

To: Find complementary products groups

2. Evaluating correlation within groups

Given:

- a) Output from clustering model
- b) market data on sales of individual data

Use: Regression with threshold

To: evaluate strength of the correlation within groups of products, using a threshold to classify between “complementary” or not, resulting in -the “value” of a group

3. A/B testing

Given:

- a) Complementary products output from previous step
- b) market data on sales of individual data(grouped)

Use: A/B test by varying shelf spaces of grouped products

To: test hypothesis of causation from shelf space and sales

4. Optimization for best value of groups

Given:

- a) Complementary Groups
- b) Values of groups

Use: optimization

To: determine best space distribution

Potential Problems

Data:

-this model was modeled under circumstances of one store, ignoring demographic difference between stores.

- A/B testing may be hard to imply given the amount of products needed to change each day.
- Defining products as complimentary based on sales only instead of being bought together