

- 52 weeks of data for each customer data
- product sales
  - purchase cycles
  - frequency of purchases
  - relative freq of purchases
  - promotions
  - customer level, product-level, customer

Subgroup:

Most of the gain comes from thinking of good features

Compares models



Maybe 20 recurrent models for 200,000 products

We have a lot of 0's. Mainly with absent data. Understanding is used to correct

don't want a lot of low spend prop. of vops

$$H_{ij} = \hat{p}_{ij} \times (p_{ij} \times \text{case-weight})$$

conversion-weight really changes the "Have You Forgotten" list.

We are interested in top ranking products;

10 Metric: Precision-at-k = propor<sup>metric</sup> of products within the top k of the predicted scores which are predicted.

11 imperfect - after

Mean is A/B

Test A	Test B
Control A	Control B

↑ <sup>↑ imperfect</sup>

customers are allocated to one of four categories

Look at uplift: new model brought in 3x time uplift.

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Raw data/hr → feature → model

Alloc → various rules applied; keep 200 (e.g. remove pet food); for each customer

Realtime engine → serves up top 5