<u>Technical Case</u>

- All data is fictional but has signal and noise that would be expected of traditional transactional data.
- The data set is composed of a sample of 5000 customers from 12 stores. Assume this is the entire store sales, but some strange behavior may be observed due to the down-sampling.

Overview

A new client, Hugh's Organics is a regional grocer operating in Eastern Europe (i.e. Czech Republic, Slovakia, Hungary), and have opened a new store in Berlin (E01) to expand into new markets.

They have run a loyalty program for the last 10 years and have recently engaged your company in a short-term promotion.

Loyalty members receive a base offer of 1 point for every $10 spent in store. For example, if a person spends $18 in store one day, and $35 the next, they would earn 1 points the first day and 3 points the following day. For ease of calculations, assume an additional 10% of points were issued as bonus points on SKU's and short-term promotions.

Assume a total of 1500 customers redeemed 170,000 points in 2007.

Provide an assessment of the loyalty programs performance:

- What is the penetration of the loyalty program in the company in 2007? You may want to consider both the penetration in the number of baskets as well as the penetration in total spend.
    - If from industry benchmarks you knew that the basket penetration was lower than expected, but revenue penetration much higher what might that suggest about customer behavior?
- What is total issuance in 2007?
    - What does the issuance vs redemption suggest about whether the program works for your customers?
- Is there anything else you feel your client should know about their customers?

Promotional Analysis

Hugh's Organics recently ran a promotion in their new Berlin store, E01. For the month of June 2008, with each transaction, customers enter a draw for a variety of prizes with each purchase and cost a total of $5,000 to run (includes advertising, prizes etc). Use descriptive analytics to evaluate whether this is a good promotion to run again or more frequently. Consider both Store E03 in Budapest as your control store where the promotion was not run. Consider both the time before the promotion and the behavior in the test vs control store to evaluate lift.

Your client heard about bayesian time series forecasting using *Causal Impact* on a podcast and wonders if they can use it to evaluate the sales lift of this promotion. Is it appropriate for this sort of analysis, what are the drawbacks or caveats? What makes it better or worse than what you provided? There is no need to build a causal impact model.