Data Scientist

PRE-HIRE AUDITION

Overview

We're big fans of pre-hire auditions, as they give us insight into how you approach projects and your quality of work. Auditions also give you additional data points around what's important to us both generally and for this particular position, which we hope to be helpful as we evaluate mutual fit.

Audition

Imagine we ran an experiment to test the impact a Loop™ campaign has on sales. The experiment involved 42 stores in 3 groups:

- "Program test": These stores had the full Loop™ campaign as it would normally run, with a display of featured products and a tablet showing 2-3 films in a looping playlist
- "Film control" These stores had the full program but with the film from one brand ("Brewery A") left out.
- "Baseline control" These stores did not have Loop™ campaigns or featured products on display.

Assume you need to provide an analysis of this experiment under time constraints (in reality, we expect you to devote 2-4 hours to this audition project).

Deliverables

There are three closely related deliverables for this audition:

1. A brief report, slide, or visualization communicating the results of the experiment for a non-technical audience.
2. Analysis code (in a language of your choice, but with a strong preference for R). Code needs to be readable but not necessarily runnable by anyone else (don't worry about package versions or other environment dependencies, for example). The goal here is to get a sense of how you approach programming with data.
3. Imagine that after this analysis is complete, you learn that we plan to run this type of experiment frequently in the future, perhaps dozens of times a month. Write a brief plan describing what you would do to prepare for this. The deliverable here can be anything from a bulleted list to a few paragraphs and doesn't need to go into great detail or be exhaustive -- focus on the things you consider most important. The goal is to get a sense of how you think about improving and scaling analyses.

Feel free to note points where you lack information. If it's impacting your ability to proceed, please reach out to elaine@theloomaproject.com to ask questions, or make (and state) a reasonable assumption and move forward accordingly.

Data Description

The csv file provided contains sample data for analysis. We receive raw data at the transaction level, with one row per customer and item purchased, with timestamps. The sample data is an aggregate of this at the "promotional period" level. Each campaign runs for one promotional period at a time. These periods vary between 3 and 5 weeks in length, so we provide sales in this data as "weekly velocity", meaning average sales per week during each period.

Specifically, the dataset contains these columns:

- `store_group`: which of the three experimental conditions the store falls in
- `store_id`: ID unique to a physical store
- `promo_period_int`: unique promo period number ordered in time (this doesn't provide information you can't get from period_num and period_year, but it's convenient)
- `period_num`: number of the promo period (there are 13 every year)
- period_year: year the period falls in (along with period_num, unique identifies the promo period)
- `weekly_velocity_amount`: average weekly dollar sales
- `weekly_velocity_quantity`: average weekly unit sales

The data provided is all for one featured product from Brewery A. The experiment was run during period number 11 of 2020. Data is provided back to mid-2018, but don't feel compelled to incorporate it all in your analysis. What data is most relevant is up to you.

Qualities We're Looking For

We're pretty big fans of transparency, so here are the qualities we'll be paying attention to. The audition above isn't necessarily intended to give us insight into all these qualities, but it will hopefully address a fair number of them.

1. Facility with programmatic analysis of real-world data
2. Ability to communicate analysis results to stakeholders in a clear and compelling way
3. Understanding of analysis engineering for scale
4. Comfort with ambiguity

Submission

Once you've completed the audition, please send your deliverables to avery@theloomaproject.com and elaine@theloomaproject.com. Finally, we don't believe in asking for free labor (even in a job interview), so we'll pay you $100 for completing this audition. Please include your mailing address with final deliverables.

Thanks so much – we look forward to seeing what you come up with!