individual also has seven additional features associated with them, which are prov
V7.

Optimization Strategy

Your task is to use the training data to understand what patterns in V1-V7 indicate
should be provided to a user. Specifically, your goal is to maximize the following m

- **Incremental Response Rate (IRR)**

IRR depicts how many more customers purchased the product with the promotion
they didn't receive the promotion. Mathematically, it's the ratio of the number of p
promotion group to the total number of customers in the purchasers group (*treati*
of the number of purchasers in the non-promotional group to the total number of
non-promotional group (*control*).

$$IRR = \frac{purch_{treat}}{cust_{treat}} - \frac{purch_{ctrl}}{cust_{ctrl}}$$

- **Net Incremental Revenue (NIR)**

NIR depicts how much is made (or lost) by sending out the promotion. Mathematic
the total number of purchasers that received the promotion minus 0.15 times the
promotions sent out, minus 10 times the number of purchasers who were not give

$$NIR = (10 \cdot purch_{treat} - 0.15 \cdot cust_{treat}) - 10 \cdot purch_{ctrl}$$

For a full description of what Starbucks provides to candidates see the **instruction**

You can find the data in the workspace on the next page. Explore the data and diff
strategies.

How To Test Your Strategy?

When you feel like you have an optimization strategy, complete the `promotion_st`
pass to the `test_results` function.
From past data, we know there are four possible outcomes:

Table of actual promotion vs. predicted promotion customers:

	Actual	
Predicted	Yes	No
Yes	**I**	**II**
No	**III**	**IV**

The metrics are only being compared for the individuals we predict should obtain
is, quadrants I and II. Since the first set of individuals that receive the promotion (i
receive it randomly, we can expect that quadrants I and II will have approximately
participants.

Comparing quadrant I to II then gives an idea of how well your promotion strategy
future.

See how each variable or combination of variables along with a promotion influen
purchasing. When you feel like you have a strategy for who should receive a prom
strategy against the test dataset used in the final `test_results` function.