Designing financial incentives to maximize participation of target populations in weight loss programs

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Introduction

Obesity is prevalent in the US.
- Almost 70% of US adults are overweight or obese, and about one-third are obese.
- We need appealing interventions that will have a broad impact.

Obesity affects some groups more than others.
- Blacks and low-income women have disproportionately high obesity rates.
- We need targeted interventions that will close health disparities.

Offering financial incentives as part of weight loss programs can contribute to both goals.

How do we design financial incentives in weight loss programs to encourage participation, especially among those most at risk for obesity?

Data and Methods

We conducted a choice experiment via mail survey. Our participants were recruited from a sample of reportedly overweight or obese patients of Carilion Clinic (1,296 respondents, 47% response rate).

Example choice set

Respondents were offered two design alternatives and an opt-out alternative. Each respondent was presented with four choice questions.

<table>
<thead>
<tr>
<th>Program A</th>
<th>Program B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program location</strong></td>
<td>Workplace</td>
</tr>
<tr>
<td><strong>Weekly weight control goal</strong></td>
<td>Losing 2 lbs</td>
</tr>
<tr>
<td><strong>Weekly reward available</strong></td>
<td>$8</td>
</tr>
<tr>
<td><strong>Payment frequency</strong></td>
<td>Once at end of program</td>
</tr>
<tr>
<td><strong>Payment form</strong></td>
<td>Pre-paid gym pass</td>
</tr>
</tbody>
</table>

We estimated a multinomial logit model with a linear systematic utility specification, including main effect and interaction terms between alternative-specific (attributes) and individual-specific (sociodemographic) variables. Results reported are based on log-likelihood values and predicted choice probabilities.

Results

Which attributes of financial incentives are most important to participation?

This figure illustrates the relative explanatory power of attributes in the choice model, by subsample. Relative explanatory power is measured by changes in the log-likelihood value of the model when variables associated with an attribute are dropped from the model specification.

![Relative importance chart]

How are the levels of financial incentive attributes ranked according to participation rate?

This figure illustrates the distribution of attribute level rankings, by subsample. Each subsample is composed of individual profiles, combinations of sociodemographic variables used in the model specification to predict participation probability. Attribute levels are ranked by participation probability, and the frequency of ranks is weighted for representativeness.

![Distribution of attribute level rankings chart]

![Reward amount chart]

Attracting participants by offering more money

Here we see how the distribution of participation probability changes as reward amount increases, by subsample (darker is greater density). If you look closely at the bottom edge of the distribution, you’ll see that participation probability decreases with increasing reward amount for all but the obese subsample. Thus, some individuals actually react negatively to increasing reward amount.

Conclusions

- Reward amount and program location are the most important attributes.
- Preferences over attribute levels differ by individual; designs can be targeted to reach populations vulnerable to obesity.
- Letting individuals choose from multiple incentive designs can increase participation.
- In fact, offering multiple designs is more effective at increasing participation than offering more money.

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