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

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Selected Poster prepared for presentation at the Agricultural & Applied Economics Association's 2014 AAEA Annual Meeting, Minneapolis, MN, July 27–29, 2014.

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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 designed alternatives and an opt-out alternative. Each respondent was presented with four choice questions.

	Program A	Program B
Program location	Workplace	Community center
Weekly weight control goal	Losing 2 lbs	Attending weekly weigh-ins and turning in records of diet and exercise
Weekly reward available	\$9	\$2
Payment frequency	Once at end of program	Weekly
Payment form	Pre-paid gym pass	Healthcare debit card
Total reward available in program	\$9 × 24 wks = \$216	\$2 × 24 wks = \$48

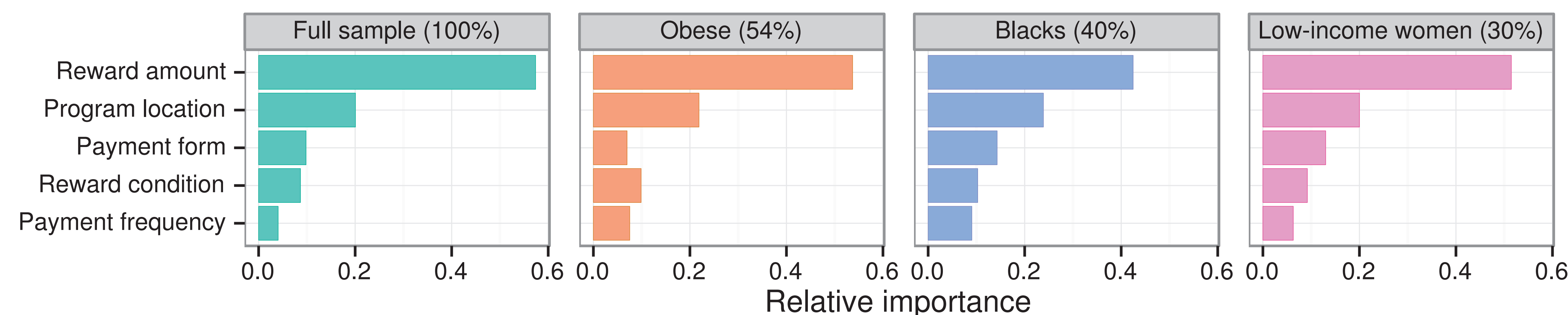
We estimated a multinomial logit model with a linear systematic utility specification, including main effect and interaction terms between alternative-specific (attributes) and individual-specific (sociodemographic) variables. Results reported are based on log-likelihood values and predicted choice probabilities.

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.

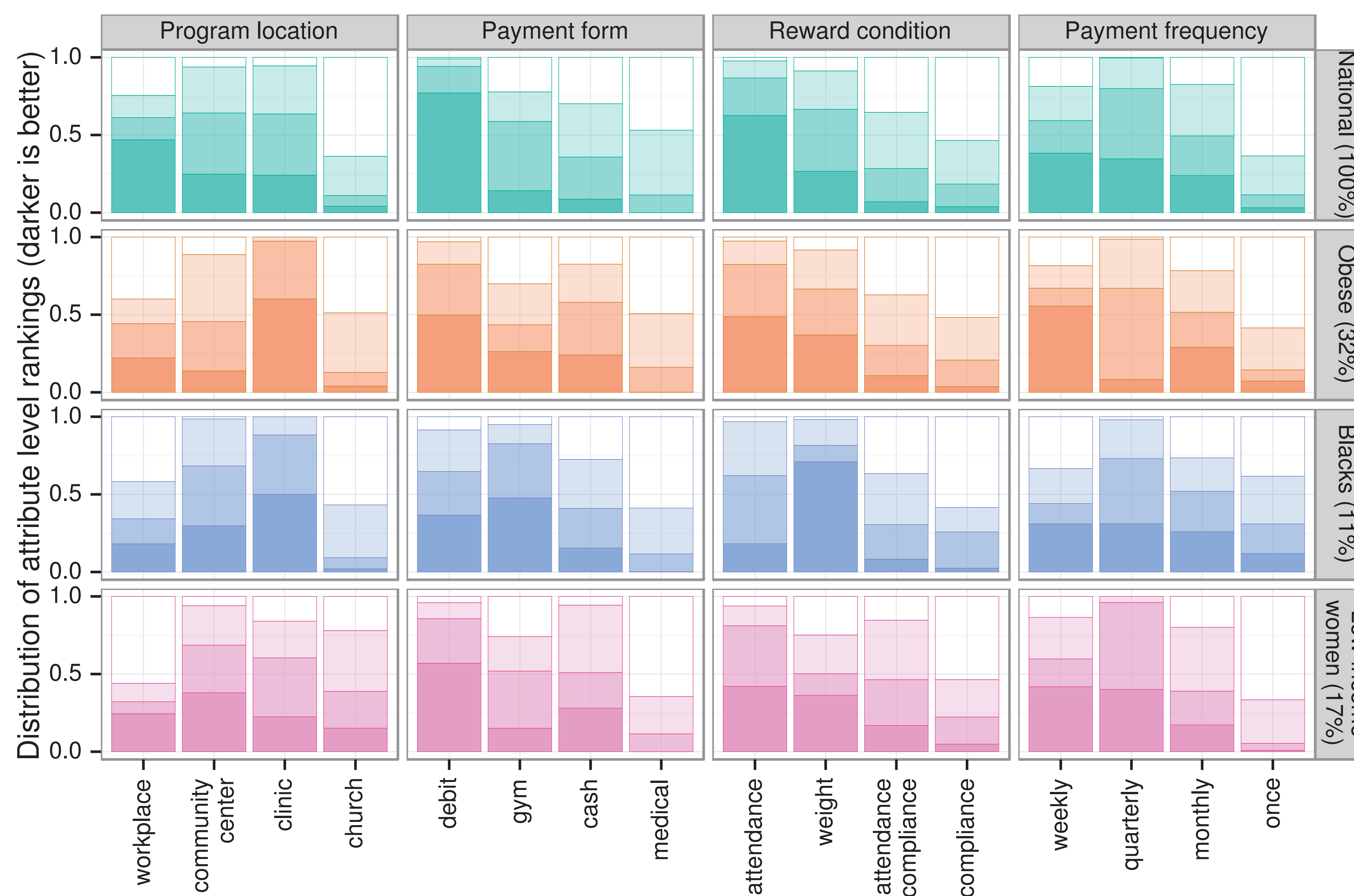
Reward amount is by far the most important, followed by program location as a distant second. Note that reward condition is more important to the obese subsample than other subsamples, and that reward amount is less important to the subsample of blacks than other subsamples.



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

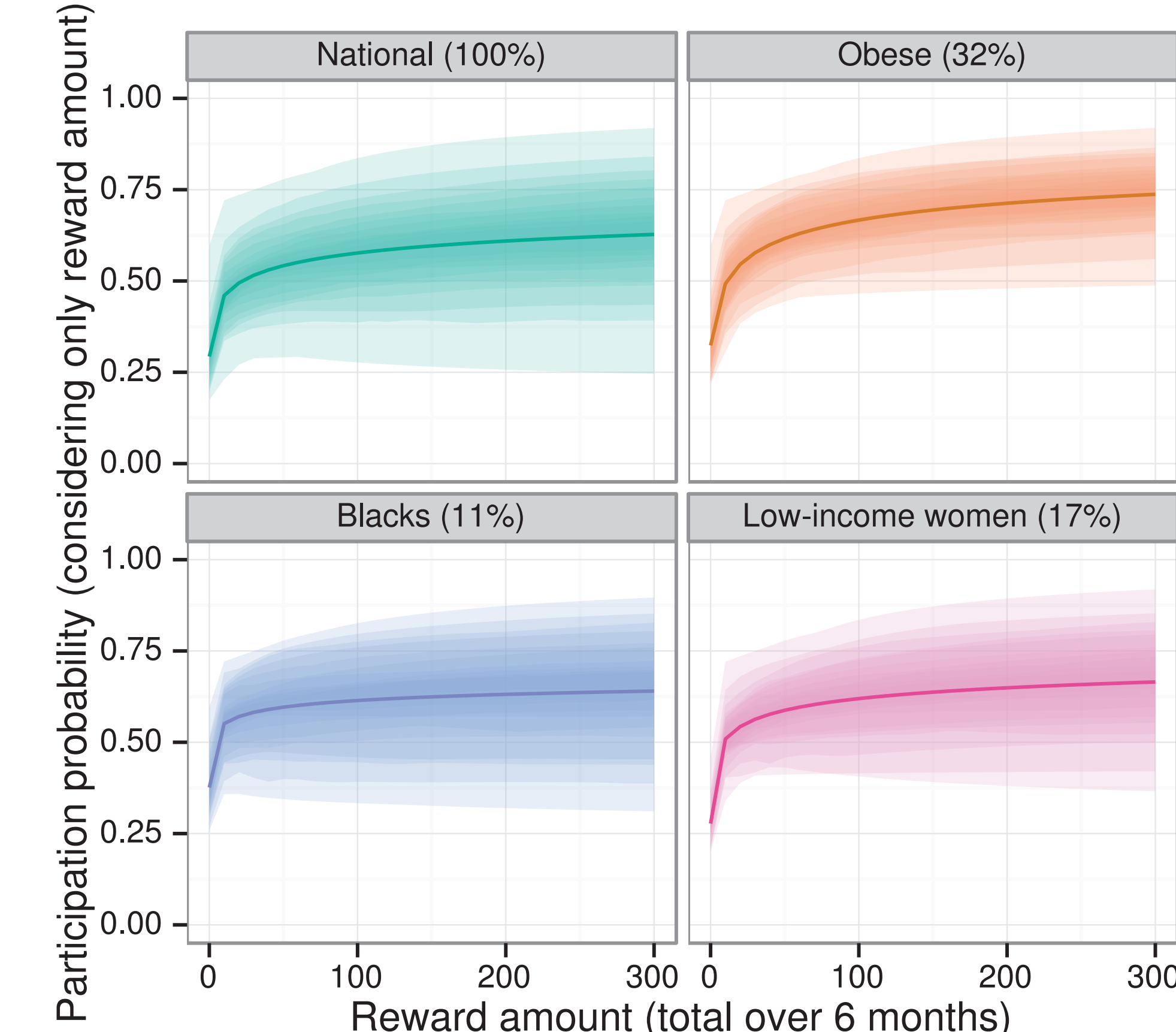
This figure illustrates the distribution of attribute level rankings, by subpopulation. Each subpopulation is composed of individual profiles, combinations of sociodemographic variables used in the model specification to predict participation probability. Attribute levels are ranked by participation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

The most desirable attribute levels are those which have high rates of ranking first and low rates of ranking last. Often these two features occur for the same level, but not always. Note that workplace is the most preferred for some individuals, but the least preferred for others. The interaction between workplace location and unemployed status has a negative effect on utility.



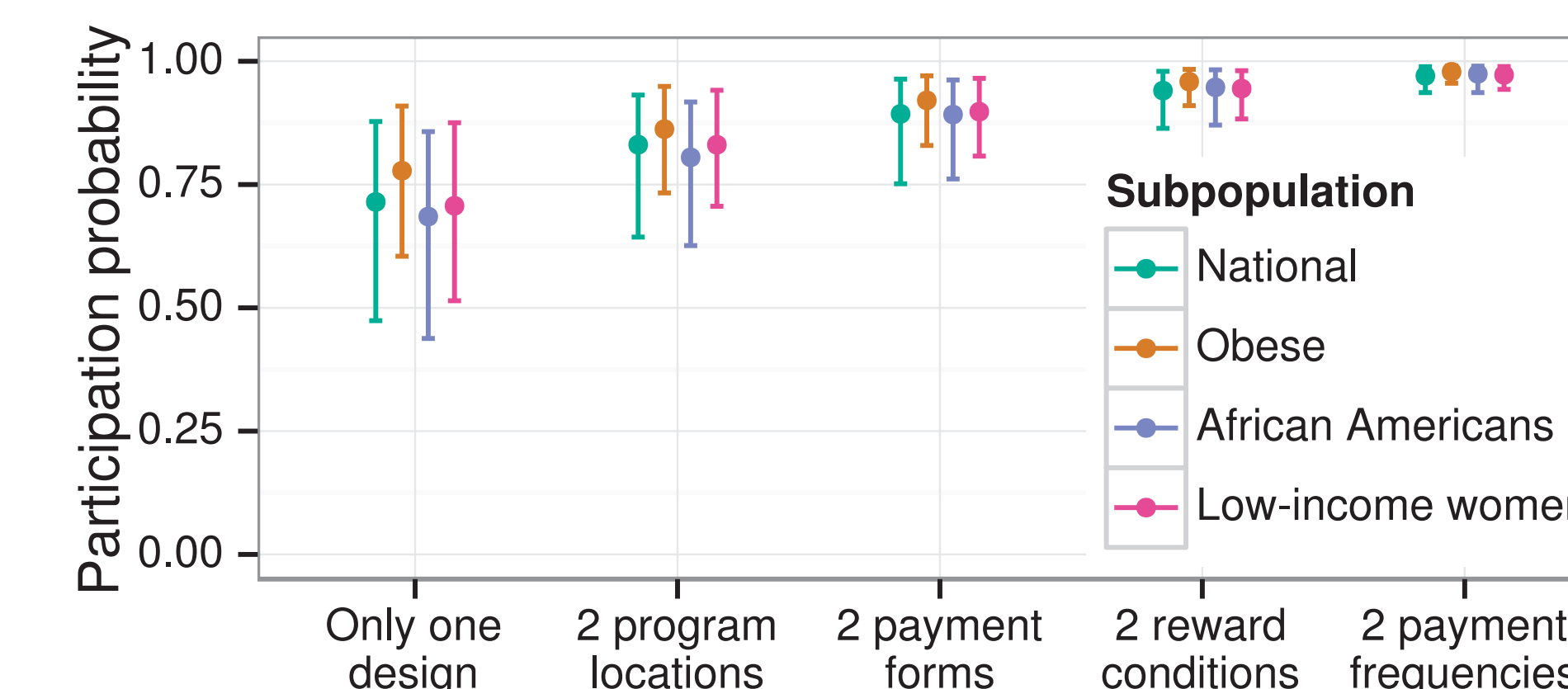
Attracting participants by offering more money

Here we see how the distribution of participation probability changes as reward amount is increased, by subpopulation (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 subpopulation. Thus, some individuals actually react negatively to increasing reward amount.



Attracting participants by offering more designs

Now we look at the distribution of participation probabilities when we offer more designs, by allowing attributes to take on two levels (error bars represent 95% coverage intervals). For each attribute, the attributes to the left are also allowed to take on two levels. Not only do the probabilities increase as more designs are offered, but the range of probabilities decreases.



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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