



**MSU COMMUNITY PREFERENCES FOR RECYCLING PROGRAM
CHARACTERISTICS**

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Briefing Paper No. 08-1

Behavior Team – Research Brief

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Date: 19 February 2008

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BACKGROUND

As part of a campus-wide study to understand MSU community members' knowledge, understanding, and preferences concerning MSU campus recycling efforts, the Behavioral Team implemented a series of complementary investigations—focus groups, in-depth interviews, and surveys. This research brief presents some findings based on analyses of some of the questions in the campus survey focused on MSU community members' preferences for alternative recycling program characteristics.

During November and December 2007, about 30% of MSU students, staff, and faculty were invited to participate in a campus sustainability survey. As part of the survey, respondents were informed about various, possible program characteristics (attributes) that might be part of a new MSU recycling program. Respondents were then asked to consider a pair of possible alternative configurations of the recycling program and select the configuration they preferred most between the two alternatives. Respondents were asked to review three pairs of alternative programs and in each case, select their most preferred option. This elicitation format (binary choice, choice experiments) has been found to be effective and robust because, among other things, respondents typically are better at choosing between their “best” and “worst”, whereas differentiating among several alternatives and then ordering is cognitively more taxing. By repeating the choice and by varying the levels of each attribute based on an experimental design, we were able to order the respondents' attribute preferences using econometric analysis (i.e., random effects probit regression analysis). That is, our analyses of the survey responses enable us to estimate separate preference functions for the program characteristics for each campus population group: students, faculty, and staff.

The survey had an overall response rate of 3742 completed surveys; with a student response rate of 20%, staff response rate of 45%, and faculty response rate of 36%. The 3742 completed choice experiment questions enabled us to econometrically analyze the three constituencies' recycling program preferences. The results of our preliminary analyses reveal that, indeed, the campus community segments share some similar program preferences as well as diverge from each other in certain aspects. We rejected, with a log-likelihood ratio test, the hypothesis with 99% confidence that students, staff and faculty have the same preferences functions.

PROGRAM ATTRIBUTES CONSIDERED

Attribute	Attribute level
Materials to be recycled	Paper, cardboard, deposit containers, non-deposit containers; Paper, deposit containers, cardboard; Paper, deposit containers, non-deposit containers; Paper, cardboard; Paper, non-deposit containers; Paper, deposit containers; Paper, deposit containers, cardboard
Bins for collection	None One bin Multiple bins Bags
Collection locations	Floor/classroom Building Drop-off Central
Waste preparation	No separation Strategic mixing Complete separation
MSU cost per person	\$50 \$150 \$300 \$500

The program characteristics (attributes) and the alternative levels were selected based on input from various team members and consultants working on the Campus Sustainability efforts supported by the Office of the Vice President of Operations and Finance.

In the survey we first presented the respondents with information about the characteristics, asked them to rank its importance on a likert scale. The materials were described individually, the exact types of paper and cardboard that would be recycled. For bins, we provided a picture in the description, and explained how the bin would be used in relation to the recycling collection location. Collection locations were explained as where the individual would go with the recyclable materials. If they would have to go to one of multiple locations on campus, or if they would could go to one spot in their building. With waste preparation we explained that with no separation, the individual would have just need to place all recyclables, aside from office paper, into one bin. With strategic mixing or there would be grouping of similar items in bins, and with complete separation, each material would have its own bin. The cost was explained as an infrastructure bond, and that the program would be self sustaining in a few years. The costs were broken down to a per person level, and reflect an assumption about program characteristics and design.

RESULTS

Cost

Having cost in the attribute bundles was crucial since it is a consistent measuring stick across all three population groups, and across all bundles of attributes. In the survey the cost of the program was explained the University would fund the program with an infrastructure bond, and that it was not a direct cost to the individual, and that within a few years the program would be self sufficient.

Cost	Students	Faculty	Staff
Per \$100	-2.21	-1.84	-1.74

Findings:

Our findings indicate that cost, has a negative, highly significant affect, which is not surprising. Programs that had a lower cost were preferred to programs that had a higher cost. However, the three groups did have varying degrees of sensitivity to the cost of the program. Students were found to be more sensitive to the cost of the program compared to faculty and staff. This could be due to the lower income of students.

Bins

The alternative types of bins were chosen based on what could reasonably be chosen: no bin, bags, multiple bins, one large bin. It was found that across all populations, some type of bin was preferred to no bin. There was little distinction made between multiple bins or one bin for collection in preferences. While bags were a distant third, and no bag was least preferred relative to the other options.

Bins	Students	Faculty	Staff
One bin	1	1	1
Multiple bins	1	1	1
Bag	2	2	2
No bin	3	3	3

All findings are significant with 99% confidence.

Findings:

The first choice for bin would be either one bin or multiple bin, there is no significant difference between the two. Followed by bags, and finally bin. This could be an area where cost can be reduced by between one or multiple bins; cost should be the deciding factor.

Location

It was explained that depending on the location of the program, they could choose a location where there would be small stations on their floor or in their department; there could be a location in their building, multiple stations through out campus to drop off recyclables, and one main location on campus. Across the populations there was a preference towards a more decentralized location, though for staff the difference between floor and building is low, leaning

slightly towards building. Having one central location was least preferred relative to other choices.

Collection Location	Students	Faculty	Staff
Floor/department	1	1	2
Building	2	2	1
Drop-off	3	3	3
Central	4	4	4

All are significant with 99% confidence except staff floor and building. There was little difference between the two.

Findings:

For students in the dorm, floor collection location is highly desired. While for faculty a floor/department collection center is also preferred, they would not be averse to a building collection area.

Stream Separation

The three options of waste preparation were explained to the respondents, the first is source separation where individuals would separate all materials for each recyclable at the collection location. There was also strategic separation where individuals group similar materials into collection containers. And the final option was no separation where all materials besides office paper would be placed into one container.

Stream separation	Students	Faculty	Staff
Source Separation	n/s	1	1
Strategic mixing	n/s	2	2
No Separation	n/s	3	3

Faculty and staff significant with 99% confidence, students did not show any significant preferences.

Findings:

Students did not show any strong preference for one form of separation over another. Perhaps somewhat surprisingly, faculty and staff showed a strong preference towards source separation relative to the other options. If source separation can be combined with multiple bins, that could be an ideal pairing of preferences.

Materials

The materials were explained and presented as possible combinations to the respondents. In each combination paper was an option since any program that is put into place would include paper. In combinations of bundles there were options of 2, 3 or 4 materials that could be recycled. Preferences were similar and significant across all populations.

Materials	Paper	Non-deposit Containers	Deposit Containers	Cardboard
1st	X	X	X	X
2nd	X	X		X
3 rd	X	X	X	
	X		X	X
4 th	X	X		
	X			X
	X		X	

Findings:

All four materials for recycling are better than fewer materials. However, if only three items can be recycled for cost reasons, eliminate deposit containers first. This could be due to deposit containers retaining value after use. And if only two items can be recycled eliminate deposit containers and cardboard.

Recommendation:

The MSU recycling program ought to include as many materials as possible. All three groups overwhelmingly wanted more materials to fewer. However, if an item needs to be taken out, deposit containers should be the first one to be removed. The location of the program ought to be as decentralized as possible. Locating the materials collection sites in places like on floors or departments was chosen by faculty and students as most preferred relative to the other options. It was clear from the recommendations that some type of bin was preferred to no bin at all. As there was no real difference between one or multiple bins, this could be an area where cost savings could be made if there is a measurable difference in cost.