

sampl plan 30/30
sample size 30/30
questions 40/40
Total 100/100

satisfaction with meal
plan???

II.5 Sampling Scheme, Questions, and Sample Size

Sampling Scheme

In our survey, there are approximately 10,000 listings in C-Book, and we use simple random sampling. Since we are exploring the undergraduates' satisfaction with CMU dining, we can approach this survey more accurately by utilizing SRS. In our case, sampling without replacement is an appropriate and easy to conduct random sampling, because as each person is sampled, he or she should be crossed off to avoid overlapping samples.

this is great

These are reasons to include random sampling in our survey:

- The student listing in C-Book 2009-2010 includes approximately 10,000 students in total.
- The students' names on each page are all mixed together in each page of the C-Book.

We will generate and repeat the following steps below.

First we will find which page number the listing starts and ends. By indexing each page, we can randomly select a page per iteration. To do this, we will use a random number generator (<http://www.random.org>).

Second, we will estimate the maximum number of items per page and index each one. By indexing each items per page, we can randomly select an item's index after selecting a page. By repeating this, we will gather a desired size of random sample pairs-- e.g. (page1, index1) (page2, index2),...(page400, index400)

ok thanks

For each pair in the list:

-Go to the list of students in C-Book. If there is the name of an undergraduate there, and he or she isn't crossed off then add him/her to your sample, we will cross him/her out in C-Book. Then start over with the next subject in the list.

-If we encounter an ineligible coverage such as already chosen person or a graduate student, we will throw away that whole subject and continue with the next student in the list.

We will repeat this until we have enough random undergraduate samples.

be alert for the possibility that
you may have to reweight your
sample to match the university
as a whole on gender, year in
school, etc.

Questions

Demographic questions:

1. Gender:
__ Male
__ Female
2. What year are you?
__ Freshmen

- ☐ Sophomore
- ☐ Junior
- ☐ Senior
- ☐ 5th years

3. What college are you in?
- ☐ Tepper School of Business
 - ☐ Humanities and Social Sciences
 - ☐ College of Fine Arts
 - ☐ Carnegie Institute of Technology
 - ☐ Mellon College of Science
 - ☐ School of Computer Science

4. Do you live on school housing? grammar!
- ☐ Yes
 - ☐ No

5. If yes, where?
- ☐ Boss House
 - ☐ Doherty apartments
 - ☐ Donner house
 - ☐ Fairfax Apartments
 - ☐ Hamerschlag house
 - ☐ Henderson house
 - ☐ London terrace house
 - ☐ Margaret Morrison Apartments
 - ☐ McGill house
 - ☐ Morewood Gardens
 - ☐ Morewood E-tower
 - ☐ Mudge house
 - ☐ Neville Apartments
 - ☐ Stever house
 - ☐ Resnik House
 - ☐ Roselawn house
 - ☐ Scobell house
 - ☐ Shady oak apartments
 - ☐ Shirley apartments
 - ☐ Spirit house
 - ☐ tech house
 - ☐ Veronica apartments
 - ☐ Webster Hall
 - ☐ Welch House
 - ☐ west wing

a lot are listed, which is fine....
do you also need
"Other: _____"?

__ Woodlawn apartments
__ Other, please specify _____

6. Are you on any meal plan (meal blocks, dinex, plaidcash)?

__ Yes
__ No

insert "Carnegie Mellon" for clarity

7. What is your race?

__ African American
__ Caucasian
__ Hispanic
__ Asian
__ other (specify?)

"check all that apply"

Race is not an interesting question here but nationality/ethnicity is.

People from different ethnic (and therefore food) traditions may react quite differently to what is offered by CMU dining services.

Substantive questions:

Could start with std US ethnicity categories:

1. I regularly have... on campus. (check all that apply)

- a) Breakfast
- b) Lunch
- c) Brunch
- d) Mid-morning/mid-afternoon snacks
- e) Dinner
- f) Late-night

-- American Indian or Alaska Native
-- Asian
-- Black or African American
-- Hispanic or Latino
-- Native Hawaiian or Other Pacific Islander
-- White

and add some international designations.

2. How often do you dine at one of the on-campus food vendors? (choose one)

- a) At least once every day of the week, including weekends
- b) At least once every day, but just weekdays
- c) Less than 5 times a week
- d) Never, I only go to Entropy

feels wierd. what about people who don't go to entropy either?
Maybe drop the clarifier?

3. How satisfied, in general, were you with your meals/snacks?

- a) Very satisfied
- b) Satisfied
- c) Neutral
- d) Unsatisfied
- e) Very unsatisfied

do you want respondents to skip the rest of the survey if they answered "d" to item 2? that would make sense to me.

(if so, you may want to incr sample size a bit so you get a big enough sample for the remaining questions)

4. How would you rate the CMU dining services when it comes to:

	Very Poor	Poor	Neutral	Good	Very Good
The food and drinks offered suit my taste/needs					
The menu variety					

Prices in general					
The quality of the food					
Healthy choice options					
The waiting time					
Cleanliness					
Staff friendliness					

5. Which vendors do you like the most, for meals? (choose up to 3)

Asiana (Newell-Simon Hall)	
Carnegie Mellon Café (Resnik House)	
City Grill (University Center)	
Downtown Deli (University Center)	
Entropy (University Center)	
Evgestos! (University Center)	
The Exchange/Ginger's (Tepper)	
Ginger's Express (Baker)	
Kosher Korner (University Center)	
La Prima (Wean)	
The Maggie Murph Café (Hunt Library)	
Mitchell's Mainstreet Market (Newell-Simon Hall)	
Quik Piks (University Center)	
Schatz (University Center)	
Si Senor (University Center)	
Skibo Coffeehouse (University Center)	
Souper Soups (University Center)	
Spice it up Grill (Resnik House)	
Spinning Salads (University Center)	
Stephanie's (Mellon Institute)	
Stir Crazy (University Center)	
Sushi Too (Resnik House)	
Take Comfort (Resnik House)	
Tartan's Pavilion (Resnik House)	
Taste of India (Resnik House)	
Tazza D'oro (Gates Hillman Center)	
Totally Juiced (University Center)	
The Underground (Morewood)	
The Zebra Lounge (CFA)	
AVI Vending (Wean/multiple locations)	

6. Why do you like these vendors? (choose up to 2)

- a) The food tastes good.
- b) It's fast.
- c) It's convenient location wise.
- d) It has a lot of options.
- e) It's healthy.
- f) The staff are friendly.

g) The dining environment is good.

7. Which vendors do you dislike the most, for meals? (choose up to 3)

Asiana (Newell-Simon Hall)	
Carnegie Mellon Café (Resnik House)	
City Grill (University Center)	
Downtown Deli (University Center)	
Entropy (University Center)	
Evgestos! (University Center)	
The Exchange/Ginger's (Tepper)	
Ginger's Express (Baker)	
Kosher Korner (University Center)	
La Prima (Wean)	
The Maggie Murph Café (Hunt Library)	
Mitchell's Mainstreet Market (Newell-Simon Hall)	
Quik Piks (University Center)	
Schatz (University Center)	
Si Senor (University Center)	
Skibo Coffeeshouse (University Center)	
Souper Soups (University Center)	
Spice it up Grill (Resnik House)	
Spinning Salads (University Center)	
Stephanie's (Mellon Institute)	
Stir Crazy (University Center)	
Sushi Too (Resnik House)	
Take Comfort (Resnik House)	
Tartan's Pavilion (Resnik House)	
Taste of India (Resnik House)	
Tazza D'oro (Gates Hillman Center)	
Totally Juiced (University Center)	
The Underground (Morewood)	
The Zebra Lounge (CFA)	
AVI Vending (Wean/multiple locations)	

8. Why do you dislike these vendors?

- a) The food tastes bad.
- b) It takes me a long time to get my food.
- c) Not enough options.
- d) It's in a bad location; I never go to some of those locations.
- e) It's not healthy.
- f) The staff are unfriendly.
- g) The dining environment is not good.

9. Which of these dining services would you like to see at CMU?

- a) Independent vendors, i.e. McDonald's, KFC, Chipotle, Wendy's, etc.
- b) A cafeteria, buffet style, in most resident halls.

- c) It's good the way it is.
10. Would you like to see healthy options at every vendor?
- Yes
 - No
11. If yes, how many?
- 1 to 2
 - 3 to 4
 - 5 or more
12. Would you like to see organic options at every vendor?
- Yes
 - No
13. If yes, how many?
- 1 to 2
 - 3 to 4
 - 5 or more
14. Would you like to see nutritional info and calorie counts on the menu boards?
- Yes
 - No
15. If you can add one type of food to the CMU dining service's menu, what would it be? (Open Ended)

Sample Size

In our survey, there are 5705 undergraduates students listed in C-Book, so our population $N=5705$. We calculate below the sample sizes for 3%, 5% and 8% margin of error for a 95% CI.

$ME = 0.03$

We first calculate the SRS with replacement sample size.

$$n_0 \geq \frac{(Z)^2(SD)^2}{(ME)^2} = \frac{(1.96)^2(0.5)^2}{(0.03)^2} = 1067.11$$

(where we take $SD = 0.5$ as a worst case), and then apply the correction for SRS without replacement.

$$n \geq \frac{Nn_0}{N + n_0} = \frac{(5705)(1067.11)}{5705 + 1067.11} = 898.96$$

Similarly,
 $ME = 0.05$

$$n_0 \geq \frac{(Z)^2(SD)^2}{(ME)^2} = \frac{(1.96)^2(0.5)^2}{(0.05)^2} = 384.16$$

$$n \geq \frac{Nn_0}{N+n_0} = \frac{(5705)(384.16)}{5705+384.16} = 359.92$$

$ME = 0.08$

$$n_0 \geq \frac{(Z)^2(SD)^2}{(ME)^2} = \frac{(1.96)^2(0.5)^2}{(0.08)^2} = 150.06$$

$$n \geq \frac{Nn_0}{N+n_0} = \frac{(5705)(150.06)}{5705+150.06} = 146.21$$

Now, we take into account the response rate, which is approximately 25%.

$ME = 0.03$

$$n / 0.25 = 898.96 / 0.25 = 3595.84$$

$ME = 0.05$

$$n / 0.25 = 359.92 / 0.25 = 1439.68$$

$ME = 0.08$

$$n / 0.25 = 146.21 / 0.25 = 584.84$$

Given the results above, it seems that a sample size of 584.84 is the most reasonable one.

We would get a marginal error of 8% if the response rate is 25%.

this is great
thanks