

II.5a Sampling Scheme & Question Design

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

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K. Decide on a sampling scheme (e.g., SRS, Stratified random sample, etc.) and explain why you chose it.

We have chosen a simple random sample where we will generate pairs of random numbers and use those numbers to extract a sample from the C-Book. The first number corresponds to a page number (from 1 to n-pages) and the second number corresponds to a student on that page (from 1 to m-students on each page.) We will then take these students' names and search the online directory for their Andrew ID's. We chose this sampling scheme because the C-Book is a good sampling frame for our target population, because the undercoverage is low and the covered population is high. Given the format of the C-Book, our sampling scheme seemed to be the most efficient way to achieve a representative sample.

L. Write a questionnaire with 20–30 questions.

(Shown below)

M. Give some idea of the sample size you will require and how you arrived at this number (talk about the margin of error for inferences you want to make).

According to "A Comparison of Web and Mail Survey Response Rates" the response rate for e-mail surveys is approximately 20%. Given our sampling scheme without replacement and assuming a 95% confidence interval with $p=0.5$ the margin of error, ME, can be written:

$$ME = \sqrt{1 - \frac{n}{N} \frac{z_{\frac{\alpha}{2}} \sqrt{p(1-p)}}{\sqrt{n}}} = \sqrt{1 - \frac{n}{N} \frac{1.96 \sqrt{.5(.5)}}{\sqrt{n}}}$$

where n is the sample size, and N is the population size. Thus, n can be written:

$$n = \frac{\beta N}{N(ME)^2 + \beta}$$

$$\beta = z_{\frac{\alpha}{2}}^2 p(1-p) = 1.96^2 [.5(.5)] = .9604$$

According to the Carnegie Mellon website there are 5,951 undergraduate students and 5,420 graduate/doctoral students. Thus, $N=11,371$ undergraduate and graduate/doctoral students. After experimenting with various sampling errors, we decided that a sampling error, ME, of 5% was the most reasonable as it would yield an $n=372$ students.

$$n = \frac{(.9604)(11371)}{(11371)(.05)^2 + .9604} = 371.606 \rightarrow 372$$

Therefore, taking into account the 20% response rate for e-mail surveys, we would need to e-mail 1860 people.

OK.... should also consider possibility of weighting sample if it appears not to be representative of whole pop in some important way.

I suggest putting demographics first since there aren't many of those questions and you have a long survey (not everyone will complete!)

Questionnaire: Knowledge and Utilization of CMU Safe Walk and Escort Services

The Carnegie Mellon community has several transportation options for students. Which of the following programs have you heard of? Check all that apply.

- ☐ Safewalk
- ☐ CMU Escort
- ☐ CMU Shuttle
- ☐ I have not heard of any of these programs

Which of the following programs have you used at least once during your time at Carnegie Mellon? Check all that apply.

- ☐ Safewalk
 - ☐ CMU Escort
 - ☐ CMU Shuttle
 - ☐ I have not used any of these programs this year
- conflicting time frame

This school year (August '09 – Present), how often do you use the following services, on average?

	Daily	Weekly	Monthly	At least once this year	Never
Safewalk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CMU Escort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CMU Shuttle??					

If you rarely or never use Safewalk services, why not? Check all that apply.

- ☐ I've never heard of Safewalk
- ☐ I don't know how Safewalk works
- ☐ I live too far away (outside of the service area)
- ☐ I don't mind walking alone
- ☐ I always walk with friends
- ☐ I don't walk to and from campus
- ☐ Other (please specify) _____

If you rarely or never use CMU Escort, why not? Check all that apply.

- ☐ I've never heard of CMU Escort
- ☐ I don't know how CMU Escort works
- ☐ I live too far away (outside of the service area)
- ☐ I don't mind walking alone
- ☐ I always walk with friends
- ☐ I have other transportation (car, PAT bus, etc.)
- ☐ Other (please specify) _____

cmu shuttle?

Adding an open-ended "why" question (or maybe "what is good/what is bad") to each of these be useful.

How comfortable are you walking across campus by yourself after dark (please circle)?

Extremely
uncomfortable

Somewhat
uncomfortable

Somewhat
comfortable

Extremely
comfortable

How comfortable are you walking off-campus by yourself after dark?

Extremely
uncomfortable

Somewhat
uncomfortable

Somewhat
comfortable

Extremely
comfortable

If you have been to the Safewalk or CMU Escort websites, how useful was the information on those sites?

	<i>Not at all useful</i>	<i>A little bit useful</i>	<i>Moderately useful</i>	<i>Extremely useful</i>	<i>I have not been to the website</i>
Safewalk	0	0	0	0	0
CMU Escort	0	0	0	0	0

We are interested in how much you know about Safewalk and Escort services. Please answer the following questions to the best of your ability. Do not ask anyone for help or look up the answers.

On what days does Safewalk operate? Check all that apply.

- ☐ Sunday
- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday

During what hours does Safewalk operate?

_____p.m. until _____a.m.

How do the Safewalk volunteers know to come pick you up? Check all that apply.

- ☐ You stand at specified pick-up points around campus, and they will pick you up as they make rounds
- ☐ You call Safewalk and they will come pick you up
- ☐ You go to Safewalk headquarters and ask them to walk you home

Where is Safewalk headquarters? _____

On what days does CMU Escort operate? Check all that apply.

- ☐ Sunday
- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday

During what hours does CMU Escort operate?

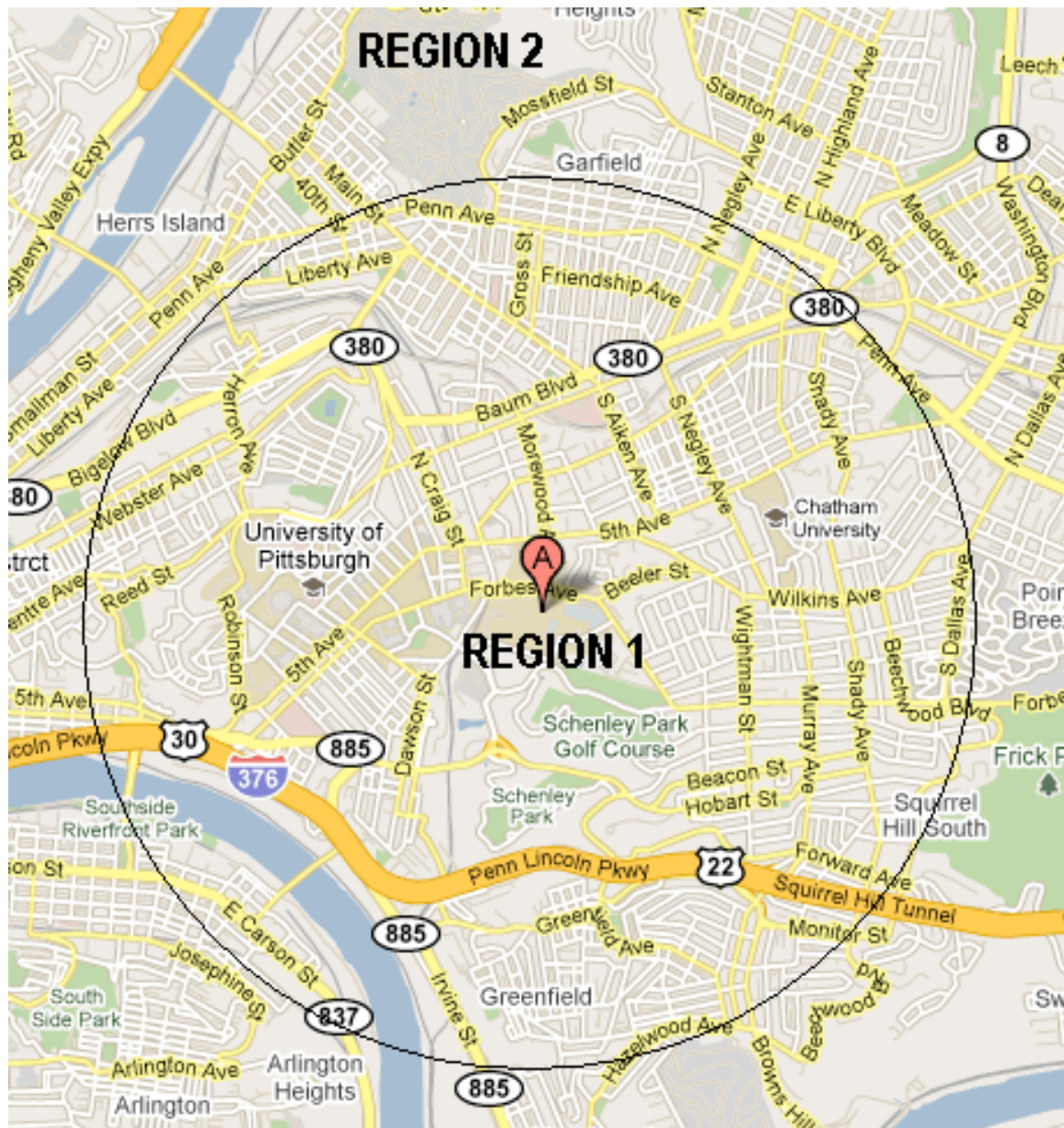
_____p.m. until _____a.m.

How does the CMU Escort know to come pick you up? Check all that apply.

- ☐ You stand at specified stops around campus, and they will pick you up as they make rounds
- ☐ You call the Escort number and they will come pick you up
- ☐ You go to Escort headquarters and ask them to drive you home

Where do you live?

- ☐ Morewood Ave. dorms [Mudge, Stever, or Morewood Gardens/E Tower]
- ☐ Greek Quad
- ☐ Margaret Morrison Street [Roselawn Terrace, Woodlawn Apartments, Boss, McGill, Hamerschlag, Donner, Welch, Henderson, Scobell, Greek Housing, Margaret Morrison Apartments, Spirit House, Tech House]
- ☐ Oakland campus housing [Fairfax, London Terrace, Shirley, Shady Oak, Veronica, Webster, Neville Co-op]
- ☐ Doherty Apartments
- ☐ West Wing/Resnik
- ☐ Other, off-campus (Please look at map below and specify region) _____



Will Safewalk drop you off at your current residence? Yes No

Will CMU Escort drop you off at your current residence? Yes No

the survey draft seems very long, and both redundant and inconsistent (4 more pages after this!).

Several questions ask, essentially, have you never heard of XXX.

Some questions ask respondent to remember what they can about safewalk, and shortly after, you provide a description of safewalk.

Also the handling of the shuttle service is inconsistent.

Suggestions:

1. provide brief defs of the services at the beginning of the survey (after demographic q's), so everyone is on the same page. you can still ask if people have heard of each service.

2. edit and reorganize the survey questions so that questions about the same things are grouped together. this will reduce cognitive load of respondent and will help you see where you've been redundant or inconsistent.

definitely having some people take the draft survey for timing and "respondent fatigue" feedback will be very helpful [probably *after* the revision I'm suggesting in #2 above].

having at least a couple people talk aloud while they do the survey will also help you clarify and refine the questions.

SafeWalk

SafeWalk provides walking escorts to any location on campus and to the Oakland house communities. It is operated by student volunteers and is for all members of the Carnegie Mellon community. SafeWalk operates nightly during the regular school year (except certain holidays) from 10pm until 2am. Campus community members may request an escort in one of two ways: calling the Dispatcher at 412-268-SAFE (x8-7233) or visiting the dispatch area in the lower level of the University Center near the Post Office Package Pick-Up Window.

Escort Service

The Escort Service provides transportation from designated pick-up locations to anywhere within a 1.5 mile radius around the main campus. It operates daily from 6:30 pm - 6:30 am (last run starts at 6:00 am) throughout the academic year and summer months. To be picked up, riders will be requested to wait at one the below locations, which are all visited as the bus returns to campus.

Designated Escort Pick-up Locations

There are 10 designated pick-up locations, each equipped with a campus phone and marked by official university signage bearing the word "ESCORT."

- Morewood Gardens (E-tower parking lot)
- Hamburg Hall
- University Center (Forbes Avenue in front of building)
- Margaret Morrison Plaza (MM Storefronts)
- GSIA/Tepper School of Business (at the corner of Tech & Frew streets)
- Porter Hall (lower Frew Street exit)
- Mellon Institute
- SEI - Rear entrance on Henry St.
- 4616 Henry Street (INI)
- 300 South Craig St.

If you live in off-campus, non-university housing, how likely would you be to utilize Safewalk if it brought you to your current residence?

Extremely unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Extremely likely	I live in campus housing
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If you have never used CMU Safewalk, what might make you more likely to use it?

___ Having more easily-accessible available about how to access Safewalk (e.g. a more user-friendly website)

___ Having more visible information about how to access Safewalk (e.g. posters with Safewalk hours and access information posted around campus)

___ If the service area were extended

___ Other (please specify) _____

If you have never used CMU Escort, what might make you more likely to use it?

___ Having more easily-accessible available about how to access Escort services (e.g. a more user-friendly website)

___ Having more visible information about how to access CMU Escort (e.g. posters with Escort hours, stops, and access information posted around campus)

___ If the service area were extended

___ If Escort would pick you up anywhere within the service area

___ Other (please specify) _____

How comfortable would you be walking home with the following combinations of Safewalk escorts (assume that you don't personally know either person). Please check one box per row.

	Extremely uncomfortable	Somewhat uncomfortable	Somewhat comfortable	Extremely comfortable
1 male				
1 female				
2 males				
2 females				
1 male and 1 female				

might want to capture these demographics first, since there are only a few questions.

What is your gender?

- ☐ Male
- ☐ Female

What is your race?

- ☐ American Indian or Alaska Native
- ☐ Asian, Asian-American, or Pacific Islander
- ☐ Black or African American
- ☐ Hispanic, Latino, or Latin American
- ☐ White
- ☐ Other

"check all that apply"

Will this be relevant to your research question? if not, might consider dropping it (why waste respondents' time).

Might also consider expanding or replacing this quest by allowing respondents to identify their nationality, since their attitudes toward safewalk/escort/shuttle might vary by culture/nation of origin.

What year in school are you?

- ☐ First Year
- ☐ Second Year
- ☐ Third Year
- ☐ Fourth Year
- ☐ Fifth Year
- ☐ Graduate Student

What is your home college?

- ☐ Carnegie Institute of Technology
- ☐ College of Fine Arts
- ☐ College of Humanities and Social Sciences
- ☐ Heinz College
- ☐ Mellon College of Science
- ☐ School of Computer Science
- ☐ Tepper School of Business

References:

<http://www.stat.cmu.edu/~brian/303/week03/mail-vs-email.pdf>

<http://www.cmu.edu/about/fastfacts.shtml>

<http://www.cmu.edu/police/shuttleandescort/>

<http://www.studentaffairs.cmu.edu/student-life/safewalk/>