Group I

Project Proposal: Biking In Pittsburgh

A. This topic is interesting due to the increasing popularity of cycling and Pittsburgh's desire to attract young people to the growing hub of biomedicine, engineering and computer science that Pittsburgh is becoming. This will probably lead to a push to make the Pittsburgh economy "green", as such it is important to know how bikers respond to weather in order to possibly improve the ease of bikers' travels during the winter. Also, knowing how biking patterns change during the winter could be useful to Bike Pittsburgh, a local organization that consists of bikers in Pittsburgh that conducts, and publishes surveys of their own.

B. Do you ride a bike? Is it your primary mode of transportation? Do you ride less in the cold? Do you feel this city is bike friendly? What could be done to improve the biking situation? Do you feel like drivers are respectful of bikers' rights? How much would you be willing to pay to see bike lanes added to main streets/bridges?
Answer: "About 20 percent of those surveyed say they ride a bike more than 5 times a week, and feel that the city is fairly bike friendly, however half of that 20 percent also said that drivers are often unaware or rude to bikers and neglect to yield the right of way.

C.
Study 1: http://www.ibike.org/library/statistics-data.htm
What can be learned from this data is the trend across the globe of bikes replacing cars as the preferred method of transportation in developed countries, as well as the increase in imports of bikes to developed nations over time. Also you can see that Asia is a huge consumer/producer of bikes.
Study 2:http://www.bicyclinginfo.org/facts/statistics.cfm (Scroll down, 2003 Omnibus survey)
What can be learned from this data is why people ride bikes. From this survey we can see that only 5% of people use bikes to commute to work. This could be due to an unfriendly environment for bicycle riders in many areas. If this is the case in Pittsburgh, perhaps there is something that could be done about it.
Study 3:http://bicycleuniverse.info/transpo/almanac.html
From this website, we can see the various patterns in bike use across age and location as well as relative health benefits for biking.
Study 4:www.aaafoundation.org/pdf/bikeuse_PBA.pdf
This study details the differing opinions in the US and Europe on bike use as a viable form of transportation. This could give a way to better promote biking in the US as not just for health but for transportation as well.

D. The population we are proposing to sample are Pittsburgh Residents (aged 18+) with a home phone, within the area code 412.

E. The population that we want to make inferences on are residents of Pittsburgh who are over 18 years old and ride bikes. This differs from the population we are sampling because many people don't ride bikes, and since there's no comprehensive list of Pittsburgh's bikers we have to deal with an imperfect sample population.

Sources of sampling and non sampling errors include the fact that people may live in areas that are unrepresentatively bike friendly or unfriendly. We also may only get responses from a certain segment of the population based on the time of day that the call is made. To remedy this, we propose that for each person that is randomly selected to participate in our survey that doesn't respond to our call; we will give 3 follow up calls at varying times of the day. With respect to ensuring that our sample is representative, we will stratify our data after it has been collected.

F. We plan to carry out the survey by telephone. We chose the telephone because we felt that on-the-street interviews were far too cumbersome and time-consuming, and we also suspected that an email survey would have a very poor response rate. While an email survey *is* easier to distribute, it is just as easily blocked, ignored, or deleted.

G. We plan to account for the money spent on the bicycles, the preferred modes of commuter transportation, and the impact of Pittsburgh's challenging weather on bicycle patronage.

H. n/a

I. Attached in the email

J. We plan to protect the privacy of respondents by both keeping the raw data stored on our computer systems and by not releasing our data with phone numbers to the general public. We do not need to link individual phone numbers to each record for archival purposes - though we will keep the first six digits of the phone number. We will not be collecting any sensitive information from our respondents, so the phone number will be the only significant identifiable information that we may have on file. Once the last four digits are removed confidentiality will be assured for our participants.

K.

We will utilize a "stratified random sampling" (proportionate allocation) method while conducting our survey. We decided to use this method because it allows us to reflect the diversity of the Pittsburgh region fairly accurately. A rough outline of our procedure is included below.
We will obtain the sampling frame is by listing of all the prefixes in Pittsburgh (area code 412) from http://phones.whitepages.com/412. Then, in order to ensure that we get a representative

sample in the sense that no one prefix is favored more heavily than it should be, we will use the same website's information on the number of telephone numbers that use that prefix. This allows us to weight the probability of selecting any individual prefix in proportion to the number of people that can be reached using that prefix. Then after a prefix has been selected, random-digit dialing can be used to determine the remaining numbers. Spreadsheet of prefixes is available upon request.

L.

How old are you?
What is your gender?
Do you live within the Pittsburgh city limits?
What area/neighborhood do you live in?
Do you ride a bicycle?
Is it a new or used/rebuilt bicycle?
How much did your bike cost?   **(various scales of cost: 0-100, 100-200, 200-400, 400-600, 600-800, 800-1000, 1000-1500, 1500-2000 etc)**
Is your bike your main mode of transportation?
If not, what is your primary mode of transportation?
Do you commute on your bike?
If not, why not?
Which season, if any, places the greatest restrictions on your bicycle riding?
 Why?

Do you feel the city of Pittsburgh could do anything to facilitate bicycle **patronage (or riding??)** in the city?
What sector of the economy do you work in?
Do you mainly ride on the street, the sidewalk, or both?
Do you find the weather in Pittsburgh to be conducive to cycling?
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Do you have a bus pass or ride the bus often?
Do you have an automobile?
What kinds of weather do you not ride your bike in?
If so, do you commute in all four seasons of the year?
Do you ride your bike less often in winter or any other season?
If so, why?
How far would you estimate that you ride your bike in a week? (in Miles)
Why do you choose to ride your bike?

On a scale of 1 to 7, how well kept would you say the roads/sidewalks are in Pittsburgh?
Do you ride any of the bike trails available in the Pittsburgh area?
If so, which ones?

M.

After Collaborating we were unable to make a better guess:

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assuming p(hat)=0.25

then

SE(p)=sqrt(p(1-p)/n)=sqrt(.25*.75/n)=.1875/sqrt(n)
sqrt(n)=.1875/SE
n=0.035/SE^2

...So, we want a confidence interval with width = 0.01
ME = 0.01*FPC = 0.01*sqrt[(334,563-200)/334,562]=0.009997

n=0.035/(.009997^2)=350 people Are how many we need to interview if we
expect a response rate of 25%
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For a given MOE, the SRS with replacement sample size would be

  n0 = 2*(SD)^2/(MOE)^2

if you think prob of pos response is 0.5, then your SE^2 = 0.5*0.5 = 0.25

If you want the MOE to be about 0.05 (so your answers will range from 0.45 to 0.55 instead of being right on 0.5) then your SRS with replacement sample size would be

  n0 = 2*(SD)^2/(MOE)^2 = 2*(.25)/(0.05)^2 = 200

The population of Pittsburgh is about N = 300,000, so the SRS *without* replacement sample size is

  n = (N*n0)/(N + n0) = (300000*200)/(300000 + 200) = 199.87

if the response rate is 25% then you need to contact about 199.87/0.25 = 800 people.

If a margin of error of 0.075 is OK (rather than 0.05) then you would need to contact only about 356 people, to get a sample of about 89 respondents.