

Biking In Pittsburgh

Section I: Introduction

Bike riding is one of the few activities in life that has cross generational/racial/social/cultural appeal and is, in many places, on the rise. Driven in part by the world-wide push toward renewable energy sources; environmental consciousness; and higher energy prices; the appeal of biking as a source of transportation has seldom been greater in the age of the automobile (1). For this and other health and recreation reasons, more and more people, nationally, are turning to bicycling. Our project surveys a cross population of Pittsburgh residents to discover current bicycling patterns and the challenges encountered when bicycling within our city. It is envisioned that the results of this survey could help city planners make Pittsburgh a more bike friendly (3) place to live and work.

At this point in our sampling, we have attempted to contact 22 individuals and have received 4 responses, giving us a response rate of about 18%. We have just begun to sample and will be able to provide more accurate data as the survey progresses.

Our survey hypotheses are:

- Winter is the season that causes people the most issues regarding their current biking habits or their reason for not using a bike to commute.
- The vast majority of people will use their bikes for pleasure/exercise opposed to commuting (2), this is due in part to the fact that our sample consists of only those with landlines and we believe that college students (who use cell phones) are the segment of the population that most uses bikes to commute to work/school.

Section II: Methods

For this question, we identified the target population as residents of Pittsburgh aged 18 and over who ride bicycles, however since no such list exists, we used an imperfect sample frame of all Pittsburgh residents over the age of 18 that have a home phone number with the area code 412. In order to get that sample frame, we made use of the white pages web site that has (5) a list all the prefixes associated with the area code 412. From this list we then filtered out all areas that lay outside of the Pittsburgh city limits but still had a 412 area code. Once we had this list in an excel sheet, we generated a random number 1-157 (the number of prefixes/columns of interest) followed by another random four digit number. The first number identified which prefix to use in the spreadsheet by row, and the four digit number provided the last four digits to dial. This process was repeated 600 times in order to give us a total of 600 numbers to call.

We chose not to include the other areas associated with the 412 area code in that we felt other variables (particularly longer commuting distances) would likely cloud and complicate the answers to the questions. Due to this fact, combined with a limited amount of time, manpower and funds, we decided that in order to have a survey from which relevant conclusions can be drawn it would be best to try not to clutter the data any more than is absolutely necessary. We calculated the sample size necessary to attain a 10 percent margin of error, given the worst possible potential response rate and Pittsburgh's population as 334,563 (4), as 96 individuals. We would preferred to get a margin of error of 5%, however we would have had to sample over 300 individuals which simply could not be done at this point. We plan on calling each individual back 3 times at various times of the day if we do not manage to get a hold of them the first time.

As previously stated, so far we have contacted 22 potential respondents from our randomly generated list and have received 4 responses (giving a response rate of approximately 18 percent). There have been no cases thus far of someone answering the phone and deciding they didn't want to participate in our survey. Sample questions from our questionnaire are listed below (not including any demographic questions):

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?

Due to the current status of our project, we have not performed post survey processing. We are currently proposing to stop collecting data on the 15th of April, however if we not received a satisfactory amount of responses we are open to the idea of extending the survey to that Saturday.

Section III: Results

Again, due to where we are in the survey process, we have too few surveys completed to be statistically valid. However, as thin as the data is so far, it does appear ~~that~~ our primary hypothesis is being validated: the winter season places the greatest restrictions on biking. Also, as would be expected, the one individual that we surveyed aged 51 doesn't use a bike to commute, preferring public transportation instead. For the final draft of our paper, we will have comprehensive statistical analysis

to test our hypothesis which should prove infinitely more insightful and interesting than our results as it stands now.

Section IV: Discussion

We believe ~~that~~ our survey questions will adequately answer our research question, however the depth of the questions is somewhat lacking and we are concerned about the usefulness of the conclusions that will be drawn upon completion. Currently there are no surprising results in our data, however that could change as we survey more people. The strength of our survey will most likely come from its simplicity and relatively un-intrusive questions . This should lead to a high response rate. However that could also be considered a weakness as it limits the conclusions that can be drawn from the completed survey. Another potential weakness of our survey lies in the process of selecting phone numbers to call. The most statistically sound method to use would have been to assign a probability to each prefix associated with the number of extensions that exist for that prefix. However our method still is rigorous enough to avoid major skewing of data and should not bias our conclusions too heavily. Regarding recommendations for the future, when planning a telephone survey *start early!* This is perhaps the most important bit of advice our group wished we had paid more heed to.

References:

- 1) <http://www.ibike.org/library/statistics-data.htm>
- 2) <http://www.bicyclinginfo.org/facts/statistics.cfm>
- 3) <http://bicycleuniverse.info/transpo/almanac.html>
- 4) http://www.city.pittsburgh.pa.us/main/html/pittsburgh_links.html
- 5) <http://phones.whitepages.com/412>

Appendices:

Informed Consent Statement and Questionnaire

Hi, my name is ____, I'm a student at Carnegie Mellon University.
I'm calling as part of a research project for my stats class. The project focuses on the impact of Pittsburgh weather on bike ridership in the city. You were selected randomly from a list of Pittsburgh prefixes, and then by random digit dialling.

Your participation in this survey is completely voluntary, feel free to skip any questions that you don't want to answer, and feel free to stop me at any time. The survey consists of 29 short questions, it shouldn't take any longer than seven minutes.

As far as privacy goes, we will be keeping your information separate from the published data, so you cannot be linked to your answers.

If you have any questions or concerns about this survey, you can contact our professor Brian Junker at brian@stat.cmu.edu

How does that sound? Do you agree to participate?

Finalized Questionnaire

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? And how?

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 bike riding in the city?

On a scale of 1 to 7, how well kept would you say the roads/sidewalks
are in Pittsburgh?

Thanks for your participation, it is much appreciated.