100/100

Parking Meters at Carnegie Mellon University

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II.5:

Research Question explained: Coin parking meters are becoming a rarity in today's technologically advanced era, so why at Carnegie Mellon has there not been a technological improvement in terms of parking on its campus since CMU is known for being such a big tech hub? In reality, Carnegie Mellon is in working stages of implementing technological improvements in terms of parking on its campus (i.e. Traffic21, ParkPGH). We want to survey on campus parking meters to determine if there is a high frequency in unpaid meters. To add, we would like to see if there are any correlations between other factors, such as the estimated value of the car, time of day, day of week, color of car, etc.

N. Pretest of a revised version of your questionnaire (or observation protocol) on a group of possible respondents/units.

There are total of 224 parking meters on campus:

Margaret Morrison St	5
Tech St	29
Frew St	168
University Center	6
Behind Morewood	16

The **sampling scheme** for our survey project is a census of all 224 parking meters, so our pretest was held on **Thursday March 8th at noon** where Kaylee Makel and Nancy Geronian were planning to survey all 224 units of our population, yet due to weather conditions (the rain) we were able to sample all the parking meters behind Morewood (16 parking meters). Our main goals were to see if a three hour time slot is enough time to sample all parking meters at Carnegie Mellon and if there are any necessary revisions needed to be made on our survey questions.

We used an EXCEL spreadsheet (we were planning to use Jungmoon's small lap-top) to record our findings; however, due to the rain we had to use a clip-board and a print out of the excel spread sheet:

Also, Victor created a reference sheet for the make of the vehicle, which we carried along while we recorded the data.

OLD questionnaire:

Questions related to the parking meter

1. Is there a vehicle parked at the parking meter?
2. Is the vehicle parked at an expired meter?
3. Is the meter broken?

Questions related to the vehicle

1. What color is the vehicle?
2. Type of vehicle (compact, minivan, truck, etc.)
3. Make of vehicle (Chevy, Ford, BMW, Mazda, Honda, Pontiac, etc.)
4. Model of vehicle (Accord, Focus, Protégé, Sunfire)
5. What state is their license plate from?
6. Does the vehicle have a ticket?
    a. How much is the ticket?
    b. What were they ticketed for?
7. Is the car clean or dirty?
8. Do they have registration? (tag located on license place)
    a. Is the registration expired?
9. Do they have their vehicle inspected? (tag located on windshield)
    a. Is their inspection expired?
10. Does the vehicle have any after market additions? (fancy exhaust system, suspension lift, spoiler, fancy rims)
11. Is the vehicle parked at a handicapped parking spot?
    a. Do they have a handicapped tag/license plate
12. Does the vehicle have any major dents, scrapes, or shattered windows?
13. Is the vehicle driving on a spare tire?
14. Does the vehicle have a parking pass to park on another on-campus location?

Questions not related to either the meter or the vehicle

1. What day of the week is it?
2. What is the time?
3. What street is the vehicle parked on?
4. What is the weather like? (sunny, rainy, cold, hot, etc.)
5. Total percentage of cars parked on each street/region

O. Report on the specification of and results from the pretest, and any redesign of the questionnaire (or observation protocol) that may be required.

Necessary Revisions:

Due to the rain Thursday afternoon, we realized that recording data without using a lap-top or an ipad-like computer is not feasible. We instead sampled only the parking meters behind

Morewood, so a total of 16 units of our entire target population. However, even with this rather small proportion we were able to see what necessary revisions need to take place. To summarize our findings, only 12 vehicles were present at the 16 parking meters (75%). It took us from 12:00pm until 12:10pm to record all the data for the 16 parking meters (about .833 seconds per car). Since it was a rainy day we believe that more people will want to drive to work and park closer (using the parking meter locations at a higher rate). Therefore, there will be around a 75% "vehicle present" rate if not less on a non-rainy day. We made some calculations and if there will be about 168 vehicles present at 224 parking meters, it will take us about 2 hours and 20 minutes in total to sample all campus parking meters. We will add some buffer time in order to walk from location to location and in case it takes a little longer for every parking meter, so a 3 hour tim slot to complete the census will be alotted.

Specific to our questionarre, we also noticed a couple of things while surveying the 16 parking meters behind Morewood. First, we noticed that most of questions are "yes" or "no" questions, so re-writing that repeatedly is a waste of time. So, we will code "1" for "yes" and "0" and "no." We also noticed how the order of the questions is a bit inconvenient. Therefore, we altered the question order to better the efficiency during the survey. We also realized that our reference sheet should be formatted in a more efficient manner. So, we put the makes of the vehicles in a column format where only a front and a back of a piece of paper is necessary instead of 7 pages. Another way to save time we coded the "type of car" using 1 for a car/sudan, 2 for a truck, 3 for SUV, 4 for VAN, 5 for motorcycle/scooter, 6 for other. Coding will be used for all but four questions in our survey. This coding method will also be on the reference sheet.

Another thing that the rain taught us during the pretest is that it is practically impossible to record data when there is rain. So, we will change the weather category on the EXCEL spreadsheet to temperature. Therefore, the surveyers must check the temperature before they begin the census. As a result, if it does rain, we will have to reschedule for the same day/time block, but during a later week. Another thing we realized is that some group members may not know how to answer some of the questions, because they may not know what the "model" of the vehicle is or where the inspection sticker or registration sticker is located, and where a parking pass for another on-campus location would be located. We will have a quick group meeting Sunday March 18th informing everyone of the changes, so everyone knows how to properly carry out the survey.

Remark: New/old reference sheet attached to the email sent out seperately and new/old EXCEL spreadsheet, as well.