

Knowledge and Utilization of CMU SafeWalk and Escort Services

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Introduction

SafeWalk and Escort Services is a study of Carnegie Mellon University's late night transportation options. In order to evaluate the effectiveness of both SafeWalk and Escort services, it was necessary to evaluate the students' knowledge of how the services work as well as how much the students' utilize these services.

CMU SafeWalk is a student run organization, which provides student volunteers to serve as walking escorts around campus and to any of the CMU Oakland house communities. This service operates nightly from 10p.m. to 2a.m. An escort can be requested by calling the hotline or visiting the headquarters in the basement of the University Center can request an escort. CMU Escort is a shuttle which drives students from designated pickup locations to anywhere within a 1.5 mile radius from campus. This service operates nightly from 6:30p.m. to 6:30a.m. and to be picked up students simply wait at one of the pickup sites.

The motivation for this study was a general concern for the safety of Carnegie Mellon students. The Carnegie Mellon police send out safety alerts almost biweekly with reports of students being robbed while walking home late at night. Fortunately, the campus community has access to late night transportation options. The two late night services are CMU Safewalk and Escort. However, these services are not effective if students do not use them. Therefore, the results of this survey will provide useful information about the effectiveness of the CMU late night transportation options as well as any demographic correlations. Finally, the results will be analyzed in order to increase both knowledge and utilization of these safety services.

Methods

The Sample

Because all members of the campus community are eligible to use both Safe Walk and Escort services, and because it was assumed that primarily students (rather than faculty) are on campus late at night, the target population for the study was all Carnegie Mellon undergraduate and graduate students who live within the region these safety services cover (i.e. within a 1.5 mile radius of campus). This includes full-time and part-time students who live both on and off campus. The sample was generated using the C-book, an annually-published directory of all members of the Carnegie Mellon community. While it is possible that there may be members of the target population who are not included in the C-book (e.g. an exchange student who arrived after the book was published) or ineligible units that are included in the C-book (e.g. students who live further than 1.5 miles from campus), this directory is overall a very complete list of people included in the target population. Students were selected into the study via a simple random sample of the C-book. Assuming a total population size of 11,371 students (the total number of students at Carnegie Mellon University, including ineligible units) and a desired margin of error of 5%, a desired sample size of 372 students was calculated. Assuming a 20% response rate for email-based surveys, we quintupled this number and emailed a total of 1878 students. After the initial email inviting students to participate in the survey, a total of three reminder emails were sent out at four-day intervals.

A total of 299 participants completed the survey. An additional 56 partially completed it. 177 abandoned it and never progressed beyond the consent form, and the remainder never opened the link. This represents a 16% response rate for completion (19% including partially completed surveys). Survey respondents are 53.8% male (compared to approximately 60% in

the population), meaning that females are somewhat overrepresented in the sample. In terms of home college, the majority of participants (31.4%) came from the Carnegie Institute of Technology; while this is the largest school on campus (representing 25.8% of the student body), engineers are still overrepresented in the sample. This was followed by students from the College of Humanities & Social Sciences (20.4%), Mellon College of Science (15.2%), School of Computer Science (12.8%), College of Fine Arts (11.6%), Tepper School of Business (6.1%), and BXA interdisciplinary and Heinz Colleges (0.9% each). Compared to the university as a whole, Tepper, BXA, and Heinz students are underrepresented, while H&SS, MCS, and CIT students are overrepresented. The proportion of CFA and SCS students in the sample are close to their respective population proportions. The majority of students who completed the survey were freshmen (82 students, 25%), sophomores (77, 23.5%) and graduate students (72, 22%). Fewer juniors (55, 16.8%), seniors (37, 11.3%), and fifth-year students (3, 0.9%) chose to participate.

The Survey

The web-based survey contained four sections: demographic information, current use of Safe Walk/Escort services, specific knowledge of *how* to use Safe Walk and Escort services, and questions about what might make students more likely to utilize these services (see Appendix A for a complete list of questions). The demographics section included only three questions: gender, year in school, and home college. The second section asked students which safety services they had heard of and/or used at least once during their time at Carnegie Mellon. There were also questions about frequency of use, and if students replied that they “rarely” or “never” used Safe Walk or Escort services, why not. The section concluded by asking students how

comfortable they felt walking on and off campus after dark and how useful they found the Safe Walk and Escort websites to be, if they had ever been there.

The third section of the survey asked about specific knowledge of the logistics of using the two services. Because students might have a hard time self-assessing the accuracy and completeness of their knowledge, this section was structured and scored like a quiz. Students were asked the operating hours of each service, as well as how to get the Safe Walk volunteers and Escort shuttle to pick them up. For each of these questions, students were also asked to rate on a three-point scale their confidence that their answer was correct (1 = “I have no idea what the correct answer is,” 2 = “This is my best guess,” 3 = “I am sure this is the right answer”). The section concluded by asking participants where they live and whether Safe Walk and Escort would drop them off at their current residence.

After taking the quiz, students were presented with accurate information about how Safe Walk and Escort actually work (see Appendix A for details) and then asked a series of questions about what might make them more likely to use the services. The first question asked how likely students would be to use Safe Walk if volunteers would drop them off at their current residence (currently, students can only be walked home if they live in campus housing). For each service type there were also closed-format questions about what might make students more likely to utilize services. For these questions students could check as many items as they wanted to, and they could also write in open-ended responses for the “other, please specify” options. Finally, participants were asked on a four-point scale ranging from “extremely uncomfortable” to “extremely comfortable” how comfortable they would be walking home with various combinations of Safe Walk volunteers (one male, one female, two males, two females, one male and one female).

Analysis of Data (*plans*)

For the analysis of our data set we first need to establish whether the responses collected through the survey are representative of the campus community as a whole. However, before we can proceed with re-weighting the responses, we need to re-code the response information into a simple, easy-to-use and easy-to-analyze format.

The majority of the questions result in categorical response variables, some of which are meant to be ordered. In order to use those variables in statistical models, we will need to recode them as factors, or numerical values with a clear hierarchy. For instance, a question asking the frequency of use of SafeWalk service has word response categories ranging from ‘never’ to ‘daily’, since this is clearly ordered information, we will assign a numerical value to each possible answer in order to be able to use the variable in a linear regression. We may assign a value of 0 to ‘Never’, 52 to ‘Weekly’ and 365 to ‘Daily’, however depending on regression diagnostics; we may use a linear (0,1,2,3...) scheme if the constant-variance assumption is violated. Questions regarding the comfort level of the respondent with a certain combination of SafeWalk escorts will be treated in a linear fashion, with the comfort level number relating linearly to the original coding of the data (not inverse). Binary categorical variables will be described as binary variables, with 0 and 1 assigned using common sense (i.e. true = 1, false = 0). The quiz question asking the timeframe of operation of the services is a bit more difficult to re-code, since the answer as a pair of values, PM to AM. We will combine differences in the responses vs. actual times for both AM and PM times, thereby creating a single numerical value to judge the accuracy of the respondent (with 0 as the best accuracy and 22 as the worst)

To establish the correct weighting scheme we will use respondent demographics, namely the year in school, gender and possibly home college to re-weigh the individual responses in

order to compute correct estimates of the variables in question. The post-stratification adjustments will be implemented using the university demographics statistics, which can be located at the following address: <http://www.cmu.edu/ira/factbook/facts2010.html>

To analyze our data we will use a variety of graphical and statistical tools, some of which were discussed in class, and some from past experience in statistics classes. We are looking to use logistic regression models to try to explain the comfort levels of students based on their gender and class affiliation. We are also interested in finding whether living off-campus affects the frequency of use and knowledge of the Safewalk and Escort services. This will also involve a logistic regression model, with only one predictor variable which will need to be coded up (the variable will describe the student as living on, off or far-off-campus). In addition we would like to test whether any variables affect the individuals not familiar with the service to start using it, however this will be accomplished via looking at the relevant question responses and not using a statistical model, since there already exists a sufficiently well-worded question in the survey.

Results (*plans*)

To reiterate from before, we would predominately like to study what portions of CMU students know about and/or utilize safe walk and escort services. We would also like to know how we could increase both knowledge and utilization of these services across campus.

Since we have not completed our analysis yet, we do not have any specific results or analyses to report as of yet. However, most of the results we would like to look at have been outlined in the previous Analysis section. We will use results from the “quiz” portion of the questionnaire along with demographics to figure out what populations on campus know the most or least about SafeWalk and Escort Services. We will use an analysis of comfort levels regarding

walking alone on campus as well as walking with other combinations of students in order to see what kind of improvements could be made to make SafeWalk more useful to the students. We will use responses from questions regarding the convenience and feasibility of using Escort Services in order to see what kind of improvements can be made to the way Escort Services is run. As far as awareness is concerned, we will take into account the results from questions regarding the appropriate websites as well as results from the “quiz” portion of the questionnaire in order to see what kind of information is lacking in the campus body so Carnegie Mellon can address this issue and possibly revamp its advertising strategies to the community.

Discussion (*plans*)

As we do not have any final data yet, we cannot judge how well each our research questions were answered. However, we feel very confident that we developed a good questionnaire that will be able to address the questions from a few different angles, giving us a holistic view of how SafeWalk and Escort Services are utilized on campus.

Due to a lack of analysis, we do not have any surprising results yet. However, some areas we are most interested in are gender demographics and usage of the services. We are anticipating a higher female response in that regard, but distance from campus may take a higher priority than we imagined. Also, an interesting result will be how information is forgotten as year in school is increased, since everyone learns about the services during orientation freshman year.

Strengths and weaknesses will become apparent as more data is analyzed, especially if we do not really get the responses we are looking for from the respondents. As of right now, we would say some of the strengths lie in the ease in which we can code most of our data. It should be pretty easy to analyze as a result of that. Another strength lies in the ordering of the questions. By providing the quiz portion prior to actually informing the respondent how the services

actually work, we are able to (hopefully) able to get a more accurate representation of how much the general student body knows.

As far as take-home messages are concerned, hopefully we will be able to present helpful information to Carnegie Mellon in order to increase the usefulness of both of these services to the community. In doing so, we may be able to decrease the amount of crime that happens around campus late and night and keep the campus safe.

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/>
http://www.cmu.edu/ira/factbook/pdf/facts2010/factbook_webversion_entirebook_feb2520102.pdf

Appendix A

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

What is your gender?

- ☐ Male
- ☐ Female

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
- ☐ BXA

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

	<i>Daily</i>	<i>Weekly</i>	<i>Monthly</i>	<i>At least once this year</i>	<i>Never</i>
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"/>

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) _____

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

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

Extremely uncomfortable	Somewhat uncomfortable	Somewhat comfortable	Extremely comfortable
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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. For each of the following questions, please answer to the best of your ability. Then indicate how confident you are that your answer is correct. 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

How confident are you that your answer above is correct?

- ☐ I am sure this is the right answer
- ☐ This is my best guess
- ☐ I have no idea what the correct answer is

During what hours does Safewalk operate?

_____ p.m. until _____ a.m.

How confident are you that your answer above is correct?

- ☐ I am sure this is the right answer
- ☐ This is my best guess
- ☐ I have no idea what the correct answer is

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

How confident are you that your answer above is correct?

- ☐ I am sure this is the right answer
- ☐ This is my best guess
- ☐ I have no idea what the correct answer is

Where is Safewalk headquarters? _____

How confident are you that your answer above is correct?

- ☐ I am sure this is the right answer
- ☐ This is my best guess
- ☐ I have no idea what the correct answer is

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

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

How confident are you that your answer above is correct?

- ☐ I am sure this is the right answer
- ☐ This is my best guess
- ☐ I have no idea what the correct answer is

During what hours does CMU Escort operate?

_____ p.m. until _____ a.m.

How confident are you that your answer above is correct?

- ☐ I am sure this is the right answer
- ☐ This is my best guess
- ☐ I have no idea what the correct answer is

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

How confident are you that your answer above is correct?

- ☐ I am sure this is the right answer
- ☐ This is my best guess
- ☐ I have no idea what the correct answer is

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]

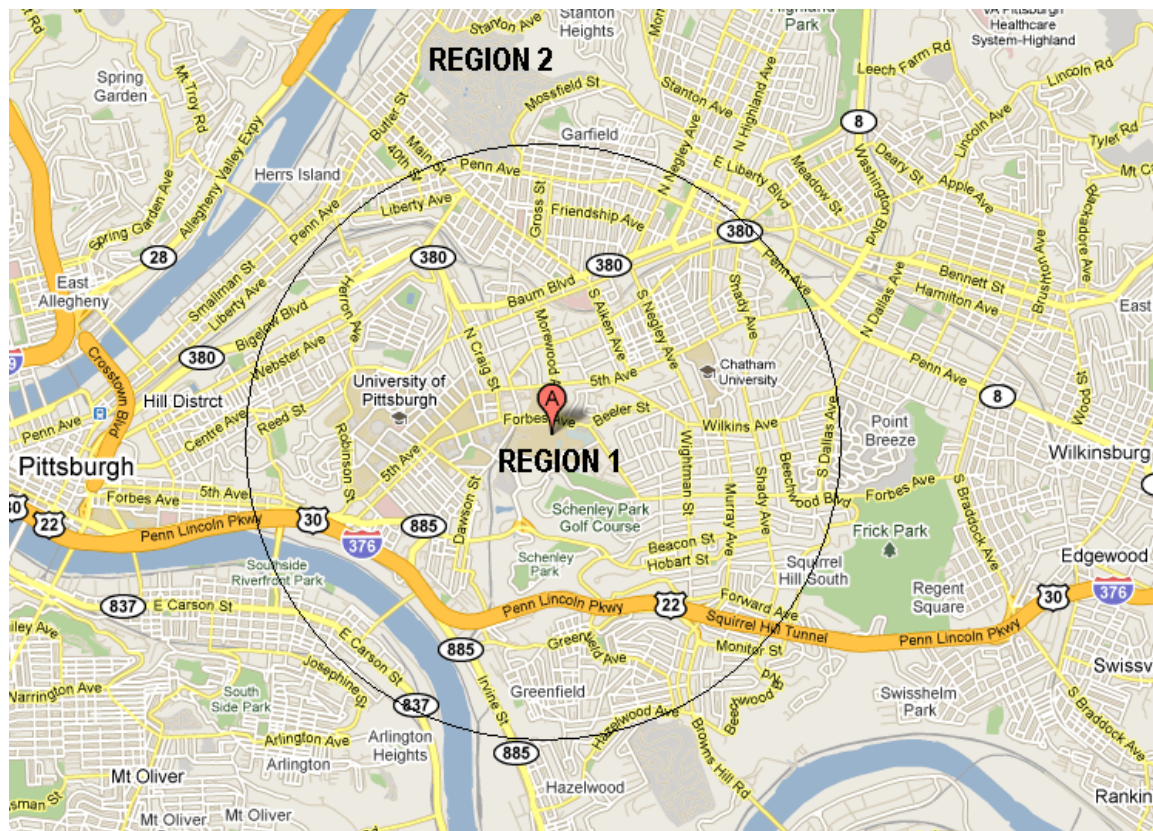
___ Doherty Apartments

___ 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 I don't know

Will CMU Escort drop you off at your current residence? Yes No I don't know



Please read the following information about Safe Walk and CMU Escort services, and then answer the final four questions in the survey.

SAFE WALK

- Student volunteers will walk you to campus and Oakland house communities
- Operates nightly from 10p.m. until 2 a.m.
- To request an escort:
 - Call 412-268-SAFE (x8-7233)
 - Visit headquarters (in the lower level of the UC, by the TV near the package pick-up window)

CMU ESCORT

- Escort shuttle drives you from designated pickup locations to anywhere within a 1.5 mile radius from campus
- Operates daily from 6:30p.m. to 6:30 a.m.
- To be picked up, wait at one of the following locations:
 - 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 Heanry 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 information 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) _____
- ___ I would never be interested in using the service

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

- ☐ Having more easily-accessible information 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)
- ☐ Having more frequent service
- ☐ If the service area were extended
- ☐ If Escort would pick you up anywhere within the service area
- ☐ Other (please specify) _____
- ☐ I would never be interested in using the service

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				