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36-303
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Final Survey Proposals

Proposal Disclaimer:

Group H has voiced its desire to complete the "Analysis of Carnegie Mellon Undergraduate Prospects After Graduation Statistics" if we are granted access to the survey data collected by the Career Center. We are currently pursuing the receipt of this data, but a "back-up" proposal is included in this Final Survey Proposal as a back up plan. We will continue to inform you of our progress.

Analysis of Carnegie Mellon Undergraduate Prospects After Graduation Statistics (On Campus)

A. **Why is this topic interesting? I there a client for whom you might do the survey?**

Given the recent scandal revealing the over optimistic prospects for graduating law school students, the statistics produced by universities and published in the US News and World Report is being brought into question. These misleading statistics encourage hopeful JD seekers to pursue startling loans with the expectation that their debts will be paid off with relative ease upon graduation thanks to the supposed 84% job placement ratings.

While the production of undergraduate college rankings has often been criticized for its accuracy of actual quality of education, Carnegie Mellon University has long boasted statistics such as its high job placement following graduation and the percentage of students pursuing graduate degrees. It is easy to imagine that false statistics presented by the Law Schools of the US also riddle the field of undergraduate school rankings.

Every year, post-graduation activities of Carnegie Mellon alumni are closely documented by the university's Career Center in order to compile the statistics published around the nation (http://www.studentaffairs.cmu.edu/career/students_alumni/post-grad-survey/index.html). To determine the accuracy of Carnegie Mellon's reported alumni successes, the un-manipulated data collected over several years by the Career Center would be acquired and reassessed. New descriptive statistics would be produced and juxtaposed with previous publications. These new statistics would span each graduating class and the entirety of the sample to account for fluctuations in the job market between graduation years. This examination of Carnegie Mellon produced data detailing the success of Carnegie Mellon alumni will reveal the accuracy with which the university to which we are enrolled enables our dreams.

Our findings will primarily serve Carnegie Mellon students by revealing a more descriptive reality of prospects upon graduation. The data may also be used to serve the university in reaffirming positive statistics or giving light to areas of potential improvement for gathering future students.

B. **What question(s) do you propose to study? Give a brief answer that would have been understandable by a non-statistician.**

Questions of concern include:

1. What percentage of CMU students find employment within 12 months of graduation?
    a. Does the employment relate to the graduate's major?
        i. What school does this major fall under?
    b. Where is this employment?
    c. What is this employment?
2. On average, how long does it take for a CMU graduate not pursuing graduate education to find employment?
3. What percentage of CMU students pursue graduate education within 12 months of graduation?
    a. Does the degree which the graduate pursues relate to the graduate's major?
    b. What caliber graduate program is the graduate enrolled in?
    c. Did the CMU graduate first attempt to find employment before pursuing graduate education opportunities?

C. **What research has already been done on the topic or on the theoretical construct of central importance to your topic? What could be learned from survey results? Each group member should locate and review 1 relevant piece or research (e.g., article report, book, etc.)**

1. Is Law School a Losing Game?; The New York Times; January 8, 2011; David Segal; http://www.nytimes.com/2011/01/09/business/09law.html?_r=1
    a. The article, "Is Law School a Losing Game?", brings into question the statistics published through US News and World Report by law schools of the United States. Segal reveals that job placement rates recorded by law schools are not a true reflection of the success of JD holders as employment unrelated to law is included in the statistics.
    - (found by David Zimmerman)

1. Ranking Systems and Miley Cyrus Draw Skepticism; Carnegie Mellon University; The Tartan; September 15, 2008; Cynthia Peng; http://thetartan.org/2008/9/15/forum/lists
    a. Perhaps in response to Forbes dismal placement of Carnegie Mellon University in 266th place on its "College Assessment List," The Tartan pointed to the incredulous rankings of other systems such as Time's "100 Most Influential People." Seeing as Time found that Miley Cyrus flanked people such as "the Dalai Lama, the Google guys, and Barack Obama," The Tartan remarked that Forbes' reporting of Carnegie Mellon as #266 was also ridiculous.
        - (found by Erika Tang)

1. College and University Rankings- Caution and Controversy; University of Illinois at Urbana Champaign; July 29, 2009; http://www.library.illinois.edu/edx/rankoversy.htm
    a. This publication acknowledged the influence of university rankings list on society, but discouraged the use of these lists to make college matriculation decisions. It revealed the skepticism shared by many universities about the data and processes encompassed in the formulation of these lists.
    - (found by Zhiyi Tang)
1. NACAC Study Shows Poor Ratings For US College Rankings; December 6, 2010; http://www.citytowninfo.com/career-and-education-news/articles/nacac-study-shows-poor-ratings-for-us-college-rankings-10120601
    a. While the preceding article discussed the inefficiencies and inaccuracies of the college ranking system that are criticized by universities, this article discussed the concerns of high school administrations and counselors in consideration of the ranking system. Those surveyed in the article found that rankings create confusion for students and families and provide false indications of school fit for prospective students.
    - (found by Erika Tang)
1. College Rankings Exposed: the Art of Getting a Quality Education in the 21st Century; 2004; Paul Boyer; http://search.library.cmu.edu/client/default/q$003dcollege$002branking$0026rw$003d0$0026d$003dent$00253A$00252F$00252FSD_ILS$00252F1409$00252FSD_ILS$00253A1409508$00253AILS$00253A0$00253A101$0026tt$003dDIRECT$0026
    a. An expert in the field of data collection utilized by colleges to produce ranking systems, Boyer discloses that students and parents are given access to discerning information masked beneath the published college statistics. Given an understanding of the "behind-the-scene" information about modern colleges, Boyer argues that the current college ranking system may be used to more informatively select perfect fit colleges for high school students.
        - (found by Je Woo Sun)

D. **Sampling Frame**

Units (graduating Carnegie Mellon undergraduates) reported by Carnegie Mellon's Career Center (Pittsburgh Campus)

E. **Target Population**

Graduating Carnegie Mellon undergraduates of the Pittsburgh campus (Sampling Frame and Target population for this study are nearly identical). The data from the Career Center consistently includes greater than 94%--74% for majors within CFA (this may be due to the reduced graduating class sizes in CFA)-- of each major's graduating class, thus the uncovered units are negligible.

F. **Mode of Data Collection**

Human data collection will have already been completed by the Career Center. To maintain the relevance of the university's currently offered concentrations, only years from 1995 to 2010 will be candidates for sample selection. Five years ranging from 1995 to 2010 will be selected in order to help eliminate bias produced by fluctuations in the job market. All units within a year selected for analysis will be included in the survey.

G. **Variables**

1. percentage of CMU alumni who find employment upon graduation (for whole sample and each of five sample years)
2. percentage of CMU alumni from each college finding employment upon graduation (for whole sample and each of five sample years)
3. percentage of CMU alumni from each major finding employment upon graduation (for whole sample and each of five sample years)
4. percentage of CMU alumni whose employment relates to their major (for whole sample and each of five sample years)
5. percentages of the job locations (states) of CMU alumni
6. average number of months of unemployment for a CMU alumni upon graduation
7. percentage of CMU alumni enrolling in graduate school
8. average comparative ranking of graduate school program compared to CMU ranking
    a. this variable would be a measurement of the deviation from CMU ranking for each graduate program pursued by CMU alumni
    b. CMU ranking would be the reference point equal to zero
    c. graduate program ranking would be measured as a negative or positive number in comparison with CMU ranking
        i. graduate program ranking would be collected from US News and World Report
        ii. negative graduate program rankings would represent programs of lesser prestige than CMU
        iii. positive graduate program rankings would represent programs of greater prestige than CMU

H. See revision of the proposals

I. see IRB form

J. **Protection of Privacy**

As the Carnegie Mellon Career Center has already gathered consent from the participants in its Post-Graduation Survey for undergraduates, individual consent for each unit in the sample is not necessary as these alumni have already made public their identifiable information through the Career Center's publication of the survey data at http://www.studentaffairs.cmu.edu/career/students_alumni/post-grad-survey/index.html. Group H nor its members will attempt to undo the anonymity already created by the Career Center. Except for the purposes of creating the survey statistics, unit characteristics will not be reported (i.e. connection between employing firm, firm location, salary, undergraduate degree, etc.).

Pedestrian Circulation throughout Carnegie Mellon(On Campus)

A. Why is this topic interesting? Is there a client for whom you might do the survey?

There are many students who engage in tabling throughout the year in order to advertise for various events or organizations. The groups range from religious groups to Greek organizations to students organizing a charity event. Each group is hoping to maximize their participation and spread the word about themselves or the event they are putting on. These students and organizations tend to place themselves near the entrance to Doherty Hall or near the Merson Courtyard of the University Center. When the weather is inhospitable these groups tend to go into the entrance hall of Doherty and the Wean commons in the University Center.

In order to maximize the efficiency of this process the groups would greatly benefit from accurate data on the traffic flow through various areas on campus. A large majority of the tablers choose to stand just outside the entrance to Doherty Hall. This may not be the best place to stand. Often the students in that area are traveling to and from a particular place and not hanging out looking for things to do. The selection of students who walk by is also limited to those who travel on that specific route. Some business students may never, or rarely pass by that particular area of campus and therefore never hear about the event. For particular events or organizations it may be better to table at locations where people have more free time or are more interested in the particular event or group that is being advertised. For example a buggy group looking for people to recruit may find more success by tabling near the UC where freshman are not rushing to class or the library. One rarely sees people tabling during the dinning hours are various locations where people eat. This is possibly a great opportunity to gain access to a significant population of on campus students who have more time to spare for tablers. Knowing what kinds of people tend to walk by various areas at particular times of the day could also greatly increase the efficiency of particular groups. Greek life that is attempting to attract rushees may want to target times when freshman are the majority of students walking through a certain area. The times when people are headed back to the dorms from classes would presumably be the ideal time for catching those who have spare time to look for activities to do or organizations to join.

B. What question(s) do you propose to study? Give a brief answer that would have been understandable by a non-statistician.

Questions of Concern:

1. When do a significant number of students walk by certain areas on campus?
    a. What is the percentage of students who are in each grade for these times?
    b. What are the respective majors of these students?
    c. Are there any times when no students walk by?
2. What places do students walk by during the different times of day?
    a. When do lots of students first start to walk to the breakfast or classes?

b. When does foot traffic include the greatest number of people?
c. When do students finish classes and walk to their other activities?

3. What time of day are students most likely to stop and interact with people tabling?
   a. Do students interact with people tabling during the day while they are walking to class?
   b. Are students more likely to walk up to tables when they are walking to meals, in the morning or after classes are finished?
4. What kinds of students walk by during various times of the day?
   a. Do the different colleges tend to have classes during certain blocks of the day?
   b. Are certain majors more likely to be willing to stop and chat about what is being advertised?
5. How does the weather affect the routes people choose on campus?
   a. In times when it is snowing do people attempt to stay in doors as long as possible?

C. What research has already been done on the topic or on the theoretical construct of central importance to your topic? What could be learned from survey results?

1. Hoogendoorn, Serge, Daamen, W.; May 1, 2005; High Beam Business; Article about Pedestrian Behavior when Faced with Bottlenecks http://business.highbeam.com/423348/article-1G1-132870779/pedestrian-behavior-bottle necks
   (found by Je Woo Sun)
2. Ling Huang, S.C. Wong, Mengping Zhang, Chi-Wang Shu, and William H.K. Lam; January 2009; Revisiting Hughes' dynamic continuum model for pedestrian flow and the development of an efficient solution algorithm Transportation Research, Pages 127-141; http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V99-4T3TPRB-2&_user=525223&_coverDate=01%2F31%2F2009&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&view=c&_acct=C000026389&_version=1&_urlVersion=0&_userid=525223&md5=45b4f0fe081e9d505da2b9522f2a4d4b&searchtype=a
   a. This article describes the factors that influence humans as the walk through pedestrian zones. It also analyzed the times of day when pedestrian traffic varied significantly in efficiency and total travel time over the span of a restricted path such as a bridge.
      (found by Zhiyi Tang)
3. J. Haslett Bell; City Planning and the Techniques for Improving Pedestrian Flow; American Institute of City Planning http://www.jstor.org/stable/pdfplus/1015851.pdf?acceptTC=true
   (found by Erika Tang)

4. John Zacharias; August 2001; Pedestrian Behavior Pedestrian Behavior and Perception in Urban Walking Environments; Journal of Planning Literature; Volume 16 pg 3-18
   http://jpl.sagepub.com/content/16/1/3.full.pdf+html
   (found by David Zimmerman)
5. Yan Song; April 2005; Smart Growth and Urban Development Pattern: A Comparative Study; International Regional Science Review; Volume 28; Pages 239-265
   http://irx.sagepub.com/content/28/2/239.full.pdf+html
   a. The article discusses several models for the behavior of pedestrians in an environment that involves vehicles. It discusses the process that humans go through as they decide what they will do on their way to a fixed location.
   (found by David Zimmerman)

D. What is the *sampling frame*? What population or populations do you plan to sample from?

All individuals walking on the Carnegie Mellon Pittsburgh campus during the hours of 7:30 am till 9:00 pm Monday through Friday. They must walk in or out of the main door of Doherty hall, the main Entrance to Wean Hall, the main entrance to Baker Hall, the main entrance to the Hunt Library, the main door of Tepper, the entrance to the Tartan Pavilion, the doors in the Merson Courtyard, and the door to the Gates-Hillman Center via the Randy Pausch Bridge.

E. What is the *target population*? To what population(s) do you wish to make inferences? How does the target population differ from the sampling frame, for your survey?

What possible sampling and non-sampling errors could arise in the survey that you plan to conduct?

Explain each possible error, how it could occur, and how you suggest tackling it.

The target population is students on the Pittsburgh Carnegie Mellon campus. They will be fully enrolled in the school either as graduate students or undergraduate students. Students from all of the different colleges will be included. These students will be walking in and out of the buildings previously specified during the hours of 7:30 am till 9:00 pm Mondays through Fridays.

In the process of observation we will exclude individuals who look like faculty or guests at the university. This will certainly introduce some error as the process of counting a large number of people may be difficult if you attempt to screen for how they look and whether they could be considered a Carnegie Mellon student. We will also have a person standing by to ask the 1 in k people who use the door whether they are a fully enrolled student at the school in order to get an estimate for the proportion of people who are CMU students.

Another source of error is the difference in flow of students through the doors of all these buildings. They can vary significantly depending on whether classes get out during that time interval and if people are headed to other buildings for classes, lunch or other activities. We will

block both by day since students tend to have schedules that vary widely depending on what day of the week it is. There are some classes on Sundays, but since tabling does not tend to occur on those days we will exclude them from the sampling frame.

F. What is the mode of data collection? How do you plan to carry out the survey and why?

We will pick out random time intervals of 30 minutes in the 7:30 am to 9:00 starting on half hour or hour. The locations we will use are the main door of Doherty, the entrance to Wean hall, entrance to Baker by the Library, the doors in the Merson Courtyard, the door to the Tartan Pavilion, the main entrance to Tepper, and the bridge to Gates-Hillman Center. An individual in the group will remain there and watch the doors. They will count all people going into and out of the building.

In this process we will allow individuals to be counted as many times as they pass by the specified locations. With this we will be measuring the total flow of persons through an area during a time interval instead of measuring the routes of individuals just once.

A second aspect to the survey will include a paper questionnaire with students standing by the previously mentioned locations and asking people in order to learn more about the characteristics of individuals who travel through specific doors on campus. The person conducting the survey will give the other person a paper questionnaire after explaining the necessary items, such as confidentiality and how the survey is voluntary.

G. What variables do you propose to measure?

1. The number of students walking by each location
    a. The time interval in which students walk through a doorway
2. The schools of enrollment for students
3. What year are the students
4. Is the student done with all their classes for the day
5. What are the weather conditions
6. Is the student going to a meal or another activity (not class related)

H. Choose a final survey topic and update or revise your answers to (A) through (G)

I. Fill out the IRB form. Submit to Professor Junker.

Attached Form

J. How do you plan to protect the privacy and assure the confidentiality of respondents? Talk about how data collection, protection, and disclosure.

For the students that we are counting as they walk through doorways. They fall under the general public information guild lines because their behaviour is public and no identifying information will be collected about the individuals in the sample. For the individuals who we sample with questionnaires we will give them a paper questionnaire and then ask them to fill it out by themselves. The survey will not ask about information such as names or birthdays, which would greatly increase the ability of tracking individuals and identifying them at a later time. We will then put these questionnaires into a box that will be opened at the end of each session where we collect data and will be transferred to a secure room where no one aside from the principal investigator and co-investigators will know where to find it. When the data is presented it will be in aggregate form so that no individuals will be identifiable in the averages, proportions, and sums that consist of the information that we will present to the class at the end of the semester.