

ARE PEOPLE IN THE RESTAURANT BUSINESS WALKING TOO MUCH?

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ABSTRACT

Background: The study that I am working on is to determine the amount of steps that the average person takes while working in a restaurant. In doing some background research, I found that an acceptable amount of steps that the average person takes in one day is 10,000 steps. I will be collecting data in order to prove that the average restaurant worker walks anywhere from 8,000-10,000 steps in less than an 8-hour shift.

Why: The reason that I chose this topic is that I work in a restaurant as a bartender and I believe that I take a lot more than 10,000 steps in a day. I think that this study can be used for many purposes. This could be anything from changing the now accepted 10,000 steps to an actually greater amount or to restructure the way that restaurants are designed to make the operation more efficient.

How: I will be using 50 people, with a variety of job descriptions, at 5 different dine-in restaurant establishments to collect data. Each person will be required to wear a pedometer for two days while working the same type of job. The pedometer will be cleared when the user clocks in to work, and recorded when he/she clocks out. I will look to have at least one weekend night and one weekday night so that there is a more accurate total. From this data, I will take an average of each individual job description and then take a complete average total.

INTRODUCTION

The purpose of this experiment was to practice performing a NORA related research project. The topic that I chose to do was an in depth research on the number of steps that a restaurant worker takes on the job. I also observed the distance that each worker walked. This information will serve the purpose of determining an average distance and number of steps that a restaurant worker takes in an hour, a 4 hour, and an 8 hour shift.

I would like the information that I have gathered to be used for two purposes. I would like for all people, especially restaurant workers, to know that the footwear that s/he chooses to wear is extremely important to the type of work that s/he will do. If people walk a lot at their jobs, then they should be looking into wearing comfortable walking shoes. But if people don't walk very

much then they shouldn't have to wear shoes that are defined as walking shoes unless s/he wants to. The other purpose that I would like for this report to serve is that this information shouldn't be used to determine if a worker is doing a good job because s/he walks a lot, but rather as an ergonomics measure of how can a business, now that it knows this information, restructure its operations. A company should be more concerned about redesigning a layout that optimizes a workers skill, but lowers the distance traveled.

METHODS

To begin this experiment, I had a lot of background research to do. In doing so, I found that it was acceptable to believe that the average person took 10,000 steps during the day. This had me thinking that most of the steps would occur in the work setting. Due to time constraints, however, I was only able to choose one aspect of business to look into. I chose the restaurant business because I believed that any worker there had to walk more than 10,000 steps, or close to that, in any shift. After I had done my research, I had to develop 3 different permission slips to protect all people involved (myself, the volunteers, and the businesses that they were employed at). All permission slips have been included in Appendix A. I didn't want any person to be subject to scrutiny based on the number of steps s/he took while working. I then submitted a Human Subject Review permission slip to SDSU so that I would be allowed to use humans in my experiment. (Appendix B)

To begin this process, I met with the manager or owner of the restaurant facility to receive permission to use their workers. Due to the time constraints, I was able to collect data from two different restaurant facilities. Even though I only observed two restaurants, I was able to observe 25 people each working two shifts.

After I met with the manager or owner, I was able to meet with each volunteer. I supplied one pedometer, a permission slip, and a data collection form to each volunteer. Each volunteer was responsible for filling out each form and returning them, along with the pedometer to me after s/he completed his/her two shifts.

To determine the amount of steps was actually quite easy. Through the help of South Dakota School of Mines & Technology and Dr. Kerk, I was able to purchase four pedometers in addition to the one that was lent to me. Shown below is a picture of the pedometers that I used. The pedometer that is shown on the left and bottom was purchased along with 3 other pedometers of the same kind. Each of these pedometers counts the number of steps that a person wearing it takes. The number of steps is counted having a ball-bearing type of object inside of a casing. This "ball-bearing" falls onto a sensor that counts the times it touches. The pedometer that is on the right was lent to me by Dr. Kerk, but operates under the same principle. The difference between this one and the other ones is that this Pedometer is able to determine the distance that a person walks as well. It does this by having the user input an amount of steps in an average stride to determine distance that the user travels. At one point, I became concerned about the data being skewed because two different brands of pedometers may not be similar in the counting phase. I decided that I would wear one of each kind for 10 hours at the same time. I found that there was a difference of two steps. For this experiment, I deemed that acceptable



Figure 1: Pedometers

I chose not to use the amount of steps that was available on the one pedometer because I wanted to have consistent data throughout the process. Instead, I counted out a space that was 10 feet long and observed each participant when they were unaware that I was doing anything in relation to the experiment. I chose to do this because I felt that if I asked a person to walk normal, s/he would be more apt to walk different than s/he would if s/he didn't know that I was observing him/her. I have inserted two pictures that show the two places that I observed each participant. (Figures 2 and 3)



Figure 3: Stride Observation



Figure 3: Stride Observation 2

These pictures were taken at one of the restaurants that I worked with; unfortunately, I was unable to take pictures at the other place. Now, in these two areas, I counted out what was ten feet and counted how many steps each person took. From there, I was able to compute all of my data.

As far as placement of the pedometer goes, each participant wore the pedometer in the front pocket of his or her pants. As shown in Figure 4



Figure 4: Placement of the Pedometer

RESULTS

Below is a table that shows an average of all the data that was collected. Everything has been averaged into 3 different categories: 1 hour, 4 hour, and 8 hour shifts. From there all the data was then split into 4 subcategories: servers, host/hostess, bussers, and kitchen staff.

Table 1: Average Steps of All Staff

	1 hour	4 hour	8 hour
All Staff	1409 Steps	5636 Steps	11271 Steps

Table 2: Average Steps of Staff Breakdown

	1 hour	4 hours	8 hours
Servers	1,588 Steps	6,352 Steps	12,705 Steps
Host/Hostess	1,300 Steps	5,199 Steps	10,399 Steps
Bartenders	1,105 Steps	4,420 Steps	8,840 Steps
Bussers	1,324 Steps	5,297 Steps	10,594 Steps
Kitchen	1,382 Steps	5,528 Steps	11,056 Steps

Table 3: Average Distance of All Staff

	1 hour	4 hour	8 hour
All Staff	0.525 miles	2.100 miles	4.201 miles

Table 4: Average Distance of Staff Breakdown

	1 hour	4 hour	8 hour
Servers	0.622 Miles	2.489 Miles	4.979 Miles
Host/Hostess	0.423 Miles	1.693 Miles	3.387 Miles
Bussers	0.501 Miles	2.003 Miles	4.007 Miles
Bartenders	0.447 Miles	1.790 Miles	3.580 Miles
Kitchen	0.630 Miles	2.519 Miles	5.038 Miles

Each section is an average between both restaurant settings. I will not be printing individual information or individual restaurant information due to the privacy of all participants. I feel that an average between both restaurants will develop into a more accurate account of what is normal.

DISCUSSION

After reviewing Tables 1 and 2, it is easy to see that in just four short hours, the average restaurant worker walks more than 5,000 steps. That doesn't give them long before they will make it to the 10,000 mark. The amazing thing to me is how far a person actually walks in a working shift. In just four hours, the average restaurant worker walks 2.3 miles. That is actually quite a distance. It is my feelings that if the average person is walking close to 5 miles in an 8 hour shift, that there should be some way to make this person's job a lot easier.

There are any ergonomics aspects that come to mind when I look at these numbers. The first of which is "*how can I make this person's job easier?*" Obviously there are some things that just cannot be changed. A server is still going to have to go into the kitchen to pick up food for the tables, but I do believe that there are ways to lower the walking distance. I have been to a couple of restaurants that have a Go-To person. The job of this person is to bring the food from the kitchen to a center place in each section. From there the server has to move to this station and then distribute food from there. Of course this has its downsides as well, but it is one possible solution.

Another question that comes to mind is "*how long can a person last at a restaurant if s/he has to walk so far everyday?*" I didn't do any studies in regards to the average turnovers from these restaurants or how long the average person works in the restaurant industry, but from looking at the distance that s/he needs to walk, it would seem that an average person would get tired out in a few short years. Lowering the distance walked may have an impact on this.

I do realize that there is no definite answer to any of these questions. It is something that I believe the restaurant business should seriously look into in order to protect its workforce. I also think that other businesses should do an experiment of their own to determine if people are not walking enough, too much, or just right.

CONCLUSION

- In four hours, the average restaurant worker takes more than 5000 steps. Halfway to the amount of steps that the average person takes in a day.
- On a breakdown of staff, for four hours the average worker takes:
 - Servers: 6,352 steps
 - Host/Hostess: 5,199 steps
 - Bussers: 5,297 steps

- Bartenders: 4,420 steps
- Kitchen Staff: 5,528 steps
- In four hours, the average restaurant worker walks more than 2 miles.
- On a breakdown of staff, for four hours the average worker walks:
 - Servers: 2.489 miles
 - Host/Hostess: 1.693 miles
 - Bussers: 2.003 miles
 - Bartenders: 1.790 miles
 - Kitchen Staff: 2.159 miles

REFERENCES

1. AllHeart.com, <http://store.yahoo.com/allheart/pedometer.html>, Pedometer Picture
2. National Institute of Occupational Safety & Health, <http://www.cdc.gov/niosh/homepage.html>
3. Occupational Safety & Health Administration, <http://www.osha.gov/>
4. Sportline Brochure, no date

Appendix A

Permission Slip for Volunteer

Walking Distance & Steps

Researcher: Angela Johnson (716-1611)

Advised by Dr. Carter Kerk at SDSM&T Industrial Engineering Program

Thank you for volunteering to help with this research project. My goal is to determine the amount of steps that a person takes in the restaurant business. Please note that all information obtained will be used for statistical purposes only, and I will be the only person who knows the distance and amount of steps that each person takes individually. The only requirements that I have for each participant is that he/she will wear a pedometer for 2 working shifts of the same job description. He/she will also be responsible for recording the amount of steps & distance onto a data sheet that will be provided.

Name: _____ / _____ / _____

Signature: _____

Permission Slip for Business

Walking Distance & Steps

Researcher: Angela Johnson (716-1611)

Advisor: Dr. Carter Kerk (394-6067)

Thank you for allowing me to gather information from your business. This information will be used only to compute statistics for a research project with South Dakota School of Mines & Technology. In signing below, you are allowing me to use the numbers that I gather from your restaurant to compute statistics, and to use your business as a reference in the paper.

Signature: _____ / _____ / _____

Name & Title: _____

Data Collection Form

Walking Distance & Steps

Researcher: Angela Johnson (716-1611)

Advisor: Dr. Carter Kerk (394-6067)

I would first like to start by thanking you for volunteering to help me with this experiment. My name is Angela Johnson and I am a student at South Dakota School of Mines & Technology in the Industrial Engineering Program. I am researching the average amount of steps that a restaurant worker takes in a scheduled shift.

What I need from each participant is for you too fill out the remainder of this worksheet. In order for this to be a more accurate collection of data, I need whoever volunteers to work the same job for two days. Thank you for taking the time to help me.

Name: _____

Business: _____

Job for 2 days: _____

Day 1

Day 2

Date: _____

Date: _____

Start Time: _____

Start Time: _____

Does the pedometer read zero? _____

Does the pedometer read zero? _____

If not, please reset it so that it does when you clock in to work.

End Time: _____

End Time: _____

Pedometer Reading: _____

Pedometer Reading: _____

Distance: _____

Distance: _____

Comments:

Appendix B

Human Subject Review Consent Form

Revised 12/00

THE UNIVERSITY OF SOUTH DAKOTA
HUMAN SUBJECT APPROVAL REQUEST

1.PROJECT DIRECTOR: Angela Johnson PHONE #: 605-716-1611
E-Mail: angela_m_Johnson@hotmail.com
ADVISOR: Dr. Carter Kerk PHONE #: 605-394-6067
E-Mail: Carter.Kerk@sdsmt.edu
2.COLLEGE/SCHOOL: South Dakota School of Mines & Tech
DEPARTMENT: Industrial Engineering Program

3.PROJECT TITLE: Walking Distance & Steps

SPONSORING AGENCY: None

4.EXTERNAL ORGANIZATIONS (businesses, schools, etc.), IF SUBJECTS ARE SELECTED BECAUSE OF THEIR ORGANIZATIONAL AFFILIATION: None

5.TYPES OF SUBJECTS TO BE SELECTED:
 Adults _____ Minors (<18) _____ Physically Disabled _____
Prisoners _____ Fetuses _____ Pregnant Women
_____ Mentally Disabled or Retarded

6.Are any drugs or chemical or biological agents to be administered to human subjects?
_____ Yes No

7.Are specimens or samples of tissues, body fluids or other substances to be collected from participants?
_____ Yes No

8.PROJECT DESCRIPTION: Complete a description of the proposed study in the format shown on the reverse side of this form (or page two of the online form).

INFORMED CONSENT: Attach copies of all forms that will be used to obtain the legally effective informed consent of human subjects or their legal representatives and any assent forms needed for minors.

INSTRUMENTS: Attach copies of any questionnaires or survey instruments.

11. PERMISSION: Provide letters of permission from any external organization noted in item 4 and other relevant information such as permission to use non-commercial, copyrighted material, and letters to potential subjects.

PROJECT DIRECTOR/ADVISOR AFFIRMATION: I will meet the ethical standards for research on human subjects and comply with the human subject regulations of the University of South Dakota. I affirm that I have read the section entitled “Responsibilities of a Project Director” in the Protection of Human Subjects at the University of South Dakota manual within the last year.

PROJECT DIRECTOR: _____
_____/_____/_____

ADVISOR (if student project): _____
_____/_____/_____

AUTHORIZING SIGNATURES:

DEPARTMENT CHAIRPERSON: _____/_____/_____

DEAN: _____/_____/_____

The signed original of this form and the consent form(s) must be submitted for review. Single copies of any other appropriate materials, such as a fuller protocol description, letters to subjects, etc., must also be provided.

One additional copy of this form and its attachments is requested if the project needs to go to the full committee for review. Additional copies of commercial survey instruments are not required.