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# Campus Vending Machines

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An Analytical Report on the Accessibility and Variety of Vending  
Machines in Popular Buildings at the University of North Texas

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December, 2011

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## Executive Summary

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Our group has investigated the feasibility of vending machines by considering where the vending machines are located, the variety of the machines, payment types available, and the number of machines at each location in buildings where student traffic is highest on campus. This analytical report discusses our investigation and the conclusion we came to after it.

The Union, Eagle Student Service Center, and Willis Library are visited most by students on a day-to-day basis, and these three are perhaps the only buildings that any student can fully expect to visit at least once per semester at the University of North Texas.

Because students come to the Union, Eagle Student Service Center, and Library most often they should have the most accessible and varied assortment of vending machines anywhere on campus. The information in this report will allow the University of North Texas to better understand where and what kind of vending machines to place at these locations. Furthermore, the information in this report may lead to an increase in University profits from vending machines on campus, especially if students are informed by this report of where vending machines are and what they offer.

Our analysis shows that the Union has the best variety of vending machines out of the three buildings covered in our research.

## Introduction

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This analytical report provides data on the vending machines located at the most student trafficked areas on campus. The buildings that were chosen were the Union, Eagle Student Service Center, and Willis Library. Students often pass through, hang out at, study in, or have academic reasons to visit these three buildings. Most students visit each of these buildings at least once per semester.

Students lead very busy lives and often do not have time to purchase and eat a full meal, and so students come to vending machines to quickly buy drinks, snacks, or even school supplies. This report provides an overview of which vending machines are most accessible, the variety of choices at each machine, and what forms of payment are accepted by each machine. This information may be used by the University of North Texas to better place and stock vending machines on campus, and if given to students may increase profits for the University by informing the students of their options.

Throughout this manual, the University of North Texas may be referred to simply as the "University." "Buildings" and "locations" may be used interchangeably. The Eagle Student Services Center may be referred to as the "ESSC," and Willis Library may be referred to as "Willis." The Lower Level floors of Willis and the ESSC may be referred to simply as "LL." "Vending machines" may be referred to as "machines."

## Methods

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Our group conducted quantitative research in the following buildings on the University of North Texas' campus:

- Union and all of the 4 floors within (Union 1, Union 2, Union 3 and Union 4, respectively)
- Eagle Student Service Center and all of the 3 floors within beginning with the Lower Level and then then floor 1 up to floor 3 (ESSC LL, ESSC 1, ESSC 2 and ESSC 3, respectively)
- Willis Library and all of the 5 floors within beginning with the Lower Level and then floor 1 all the way to floor 4 (Willis LL, Willis 1, Willis 2, Willis 3 and Willis 4, respectively).

We did not conduct research at any other locations on campus because no other building has noteworthy traffic on a daily basis. Furthermore, these three are the only buildings on campus where students are almost guaranteed to visit once per semester.

### Method for Sampling Accessibility

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To sample accessibility at Union 1-4, ESSC LL-3, and Willis LL-4, we followed this procedure:

1. Begin on the lowest level of the building.
2. Walk around and examine entire floor for vending machines.
3. Record location of vending machines as they are found.
4. Examine the immediate area of the vending machines and assess the ease of finding the vending machine.
  - a. The scale for locating a vending machine will be from 1-5, where 1 is the hardest machine to find and 5 is the easiest.
5. Record gathered information.
6. Move up to next level and repeat these steps from step 1.
  - a. Do this until the final level of the building is reached.

### Method for Counting Machines

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To count machines at Union 1-4, ESSC LL-3, and Willis LL-4, we followed this procedure:

1. Count the number of vending machines in immediate area.
2. Record the number of machines found at each location.

## Method for Sampling Payment Type

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To sample payment type at Union 1-4, ESSC LL-3, and Willis LL-4, we followed this procedure:

1. Look at payment area on the machine.
2. Record if the vending machine accepts cash.
3. Record if the machine accepts credit cards.

## Method for Determining Choice

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To determine the choices at Union 1-4, ESSC LL-3, and Willis LL-4, we followed this procedure:

1. Assess what each vending machine has to offer.
2. Record if vending machine offers food, drink, or other.
  - a. If drink is offered, record what type of drink is offered.
    - i. If energy drink, record energy.
    - ii. If carbonated, record soda pop.
    - iii. If fruity, record fruit.
    - iv. If water, record water.
  - b. If other, record what is offered.

## Results

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This section presents results of the assessment of the vending machines found at the three locations explored.

### Accessibility

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Sampling at the three buildings resulted in a variety of data (see Table 1). We found a trend where most buildings have vending machines located on their lowest levels. In the Union, vending machines are, for the most part, adequately to easily accessible. The ESSC had easy to find vending machines but only on two of the four floors. Willis had one difficult to find machine on floor LL and three machines on floor 1 that were very easy to find.

Table 1: Accessibility Ratings of Vending Machines

Building and Floor	Accessibility Rating
<i>Union</i>	
1	3
2	2
3	3
4	4
<i>Eagle Student Services Center</i>	
LL	4
1	4
2	N/A
3	N/A
<i>Willis Library</i>	
LL	2
1	4
2	N/A
3	N/A
4	N/A

## Variety

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The variety of vending machines showed to be vastly different at the three buildings (see Table 2). We found that the Union has the best variety of drink vending machines. The Union by far has the most drink vending machines, especially soda. We found that the ESSC had the most food vending machines and that Willis Library was the place to go if one needed office or school supplies.

Table 2: Variety of Vending Machines

Building and Floor	Soda Drink	Energy Drink	Fruit Drink	Water	Food	Office Supplies	Total
<i>Union</i>							
1	1				1		2
2	1	1					2
3	1	1					2
4	2						2
<i>Eagle Student Services Center</i>							
LL	1			1	1		3
1	1		1		1		3
2							0
3							0
<i>Willis Library</i>							
LL	1			1	1		3
1						1	1
2							0
3							0
4							0



## Payment

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The payment type at a vending machine is usually not a determining factor for someone to buy a product, but Table 3 (next page) shows that it is indeed an important factor. We found that anything from a vending machine in the Union may be paid with a credit card. This is very convenient for hurried students or those without spare change on their person. The ESSC has a mix of cash-only vending machines as well as machines that also accept credit cards. These cash-only vending machines may limit the options of hurried students or those who do not have spare change on their person. Lastly, Willis Library accepts only cash. This may have the same effect as previously mentioned for the ESSC, but with greater impact as there are no credit card-accepting alternatives.

Table 3: Payment Type between Vending Machines

Building and Floor	Cash	Credit Card
<i>Union</i>		
1		2
2		2
3		2
4		2
<i>Eagle Student Services Center</i>		
LL	1	2
1	1	2
2		
3		
<i>Willis Library</i>		
LL	3	
1	1	
2		
3		
4		

## Conclusion

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Vending machine accessibility, variety, and available payment types may have significant influence on where students study or spend their free time on campus. Based on our findings we place payment type as the least important factor in choosing a vending machine to buy from, accessibility as the second most important factor, and variety as the first most important factor.

Variety was chosen for the first factor because if the choice a student is looking for is not in the machine, he/she will most likely leave, no matter how easy the machine was to find or what payment type it takes.

Accessibility is second most important because it only takes a few visits to remember a machine's location. As shown in Table 1, about 16% of vending machines in the three buildings take some significant effort to find. In spite of this, we found that the vending machines that take effort to find are often out-of-order or out of products. This may mean that either the vending machines are actually just as popular as the others or that the faculty is neglecting to check on and replace those machines on a regular basis. Or perhaps the floors these machines are located on are simply more popular than the others, and thus their machines are more often used regardless of how hard they are to get to.

Which payment types are available for vending machines is the least important factor in choosing a vending machine to buy from. There are two options per vending machine: cash only, or cash and credit card. Students may purchase from any vending machine with just cash or spare change, but not having any cash or spare change and only having a credit card will significantly limit a student's options. However, there are several ATMs located on campus at which students may withdraw cash to use freely. While this cash may initially be in bills too large to spend at vending machines, there are many opportunities on campus to "break" these bills into smaller ones and change at any of the many shops, restaurants, and student service offices on and around campus. In short, because cash itself is rarely in short supply, cash-only vending machines are not very limiting on students.