Assessment of Valpo Transit Bus Wait Time

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Abstract

The Valparaiso University Transit Bus is a transportation option where students can request the bus at 23 different locations on campus using the Valpo Transit Tracker app. Operating from 7AM to 2AM the next day, many Valpo students utilize this resource for travel across campus. Whether a student wants to avoid less than ideal weather or a long walk, the bus offers safe, comfortable, and easy transportation. However, wait time for the transit bus often stands in the way of quick and easy travel. This study looks to assess the wait time of the Valpo Transit Bus and compare it during five different periods of the day. Statistical values of wait time are presented to properly evaluate the subject and draw conclusions. With approximately 247 riders a day, a proper understanding of wait time is crucial to determine the value of shuttle bus usage and identify issues if there be any.
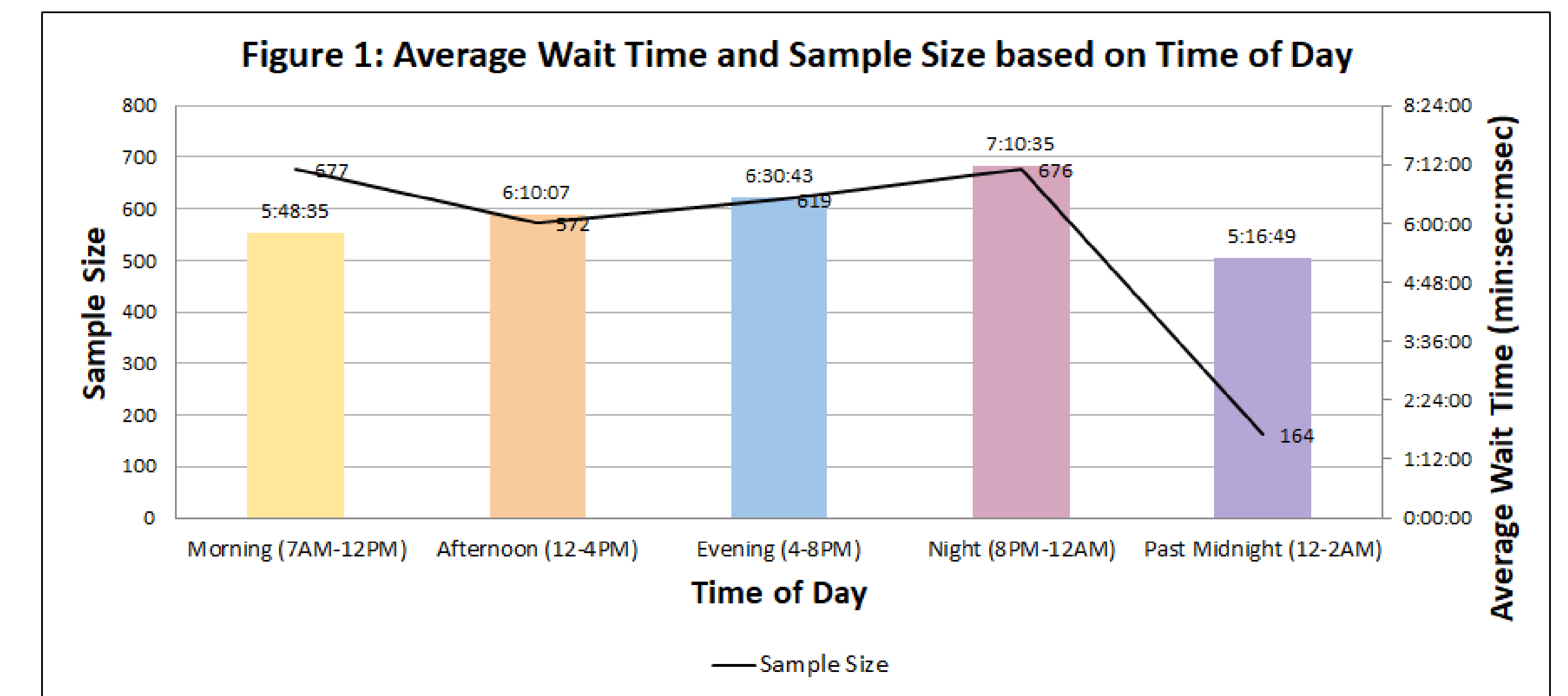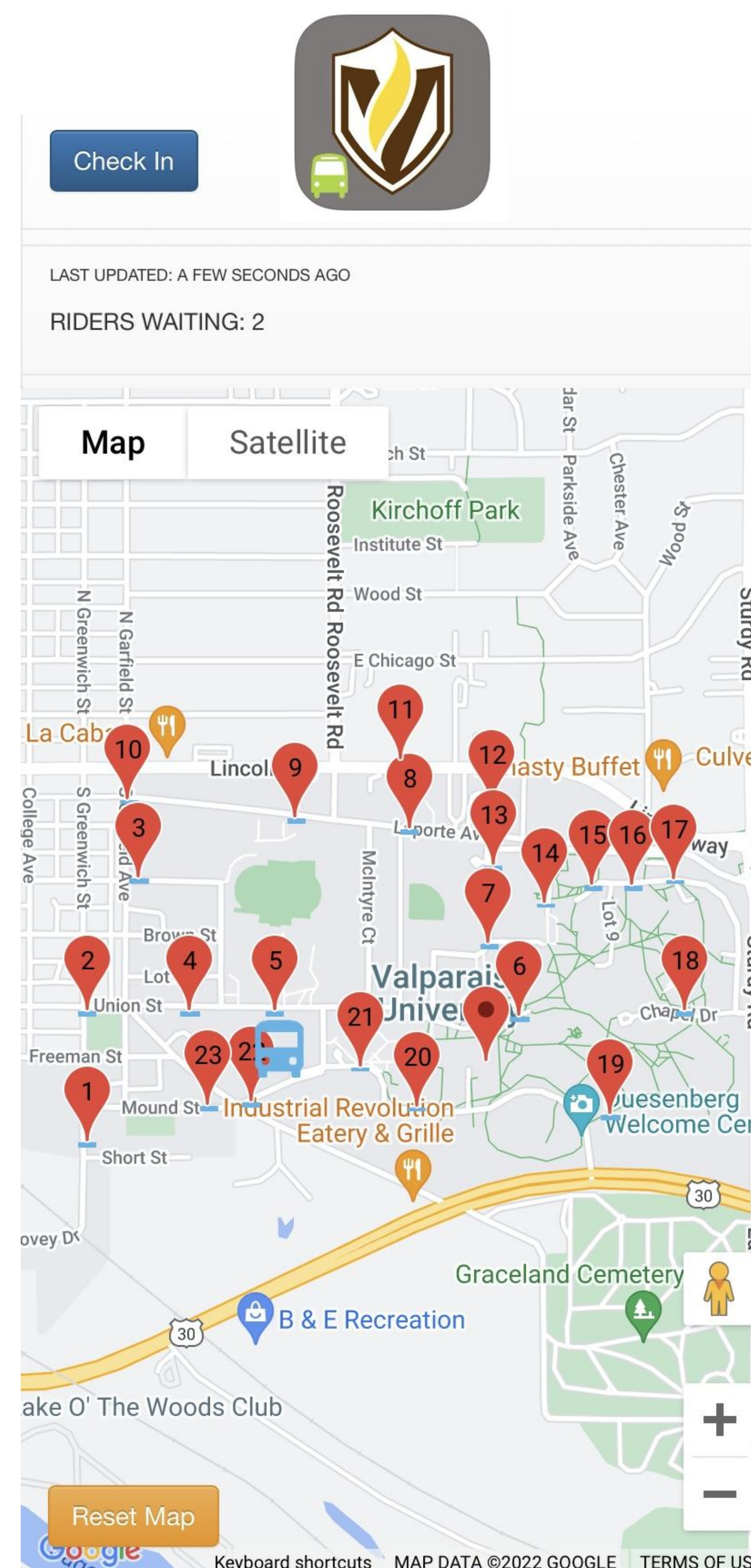
Research

Originally, wait times were being personally recorded, but it was determined that the sample sizes would be too small to make any strong conclusions.

Parking & Transportation Manager Adam Klos then provided app data from March 28, 2022 to April 10, 2022. This two-week period served as a well-rounded sample as it contained days of varying weather conditions. The data consisted of 3,414 app usages to request the bus. However, it was determined that 2,708 wait times were accurate with regards to request and confirmed pickup, meaning that 706 requested rides were cancelled. A request could be cancelled for many reasons: the student canceled the request upon entering the bus, the student no longer needed a ride, or the student could not wait any longer.

The data was divided into Morning (7AM-12PM), Afternoon (12-4PM), Evening (4-8PM), Night (8PM-12AM), and Past Midnight (12-2AM). Statistical values were then calculated to determine wait times and compare the values during different periods of the day.

	Morning (7AM-12PM)	Afternoon (12-4PM)	Evening (4-8PM)	Night (8PM-12AM)	Past Midnight (12-2AM)
Sample size	677	572	619	676	164
Average (mm:ss:ms)	5:48:35	6:10:07	6:30:43	7:10:35	5:16:49
Standard Deviation (mm:ss:ms)	3:46:47	4:17:13	4:42:08	5:06:49	3:17:11
Median (mm:ss:ms)	4:52:00	5:06:30	5:16:00	6:20:30	4:16:30
Minimum (mm:ss:ms)	0:26:00	0:25:00	0:40:00	0:10:00	0:39:00
Maximum (mm:ss:ms)	23:22:00	24:55:00	29:53:00	37:58:00	16:43:00

The table above displays the calculated statistical values based on the confirmed wait times.

Valpo Transit Bus

Main page of Valpo Transit Tracker App showing pickup locations and real-time bus location.

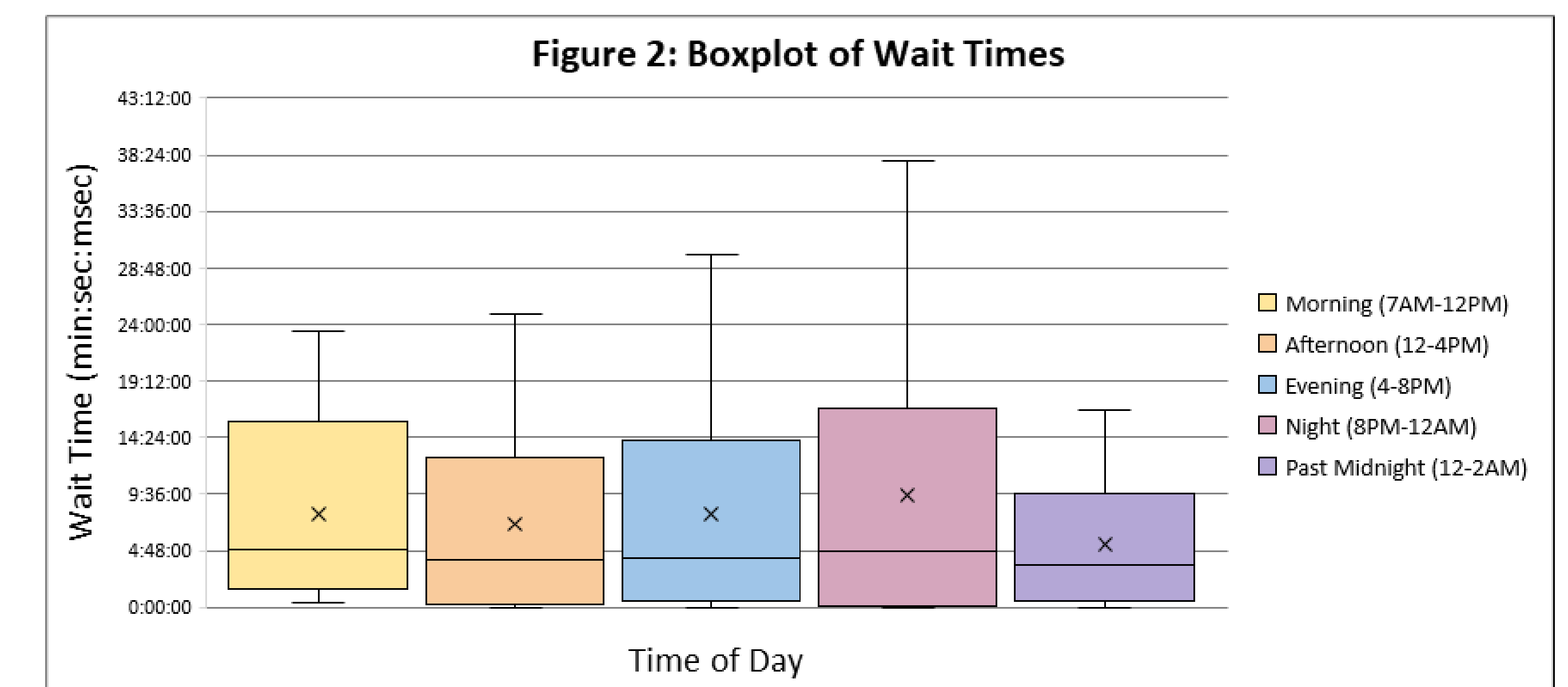*Special thanks to Professor Jay Grossman and Parking & Transportation Manager Adam Klos*

Figure 1 demonstrates the five different periods of day, average wait time for each period, and sample size for each period.

Figure 2 illustrates minimum, Q1, median, Q3, and maximum wait time values for each period of day.

Conclusions

Comparing statistical values between the five different periods of day shows that the period from 12-2AM requires the smallest average wait time. The "past midnight" period also possesses a sample size of almost 3x less than the others. Throughout the day, riders can expect an overall average wait time of about 6 minutes and 11 seconds. However, there are outlier instances of waiting only 10 seconds or waiting nearly 38 minutes. The night period of 8PM-12AM holds the longest average wait time of 7 minutes and 11 seconds and produces the most variability as it possesses the largest standard deviation, the overall minimum, and the overall maximum wait times.

Within a student's perspective, is it worth it to wait for the bus? Obviously, this depends on each student's patience and time available to wait. However, it was determined that a student can expect a wait time of about 6 minutes which seems like a reasonable amount of time to wait for a bus. Considering typical public transportation, the wait time for the Valpo Transit bus is considerably less, especially being that students can request the bus to a location rather than having to follow the bus's schedule.

As for recommendations, other university campuses could benefit from implementing a transit bus similar to Valpo's where students can request the bus to specific locations via app.

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