Spring 2014 EDAV4701 Data Visualization Blogpost: My Bad Piecharts
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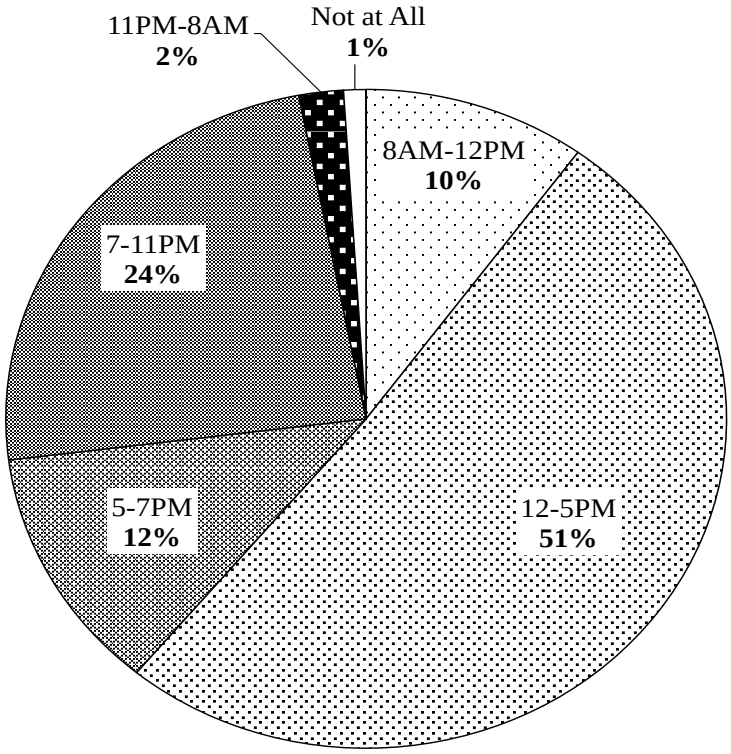
Chart 1 below is my original attempt to summarize responses to a 2001 survey about when graduate students are most likely to use the library. At the time, and even until recently, I thought this was a very clever way to show the findings. But, in trying to explain it to classmates several weeks ago, it occurred to me that the visualization is not as swell as I thought. Theoretically it was fun, but the data are not straightforward to interpret.

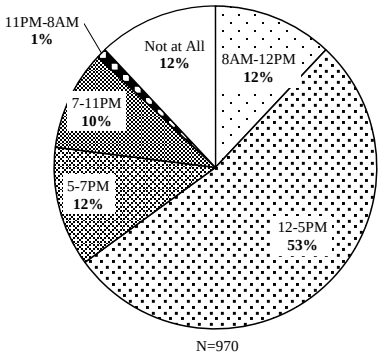
Chart 1
Times of Day Most Likely to Use Libraries By Day
All Graduate Students

Monday-Thursday



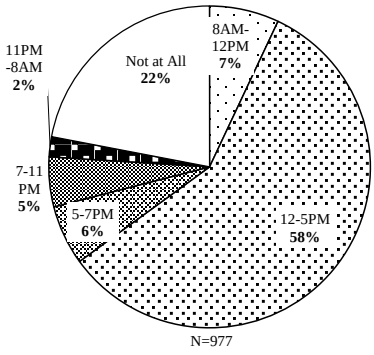
N=1025

Friday



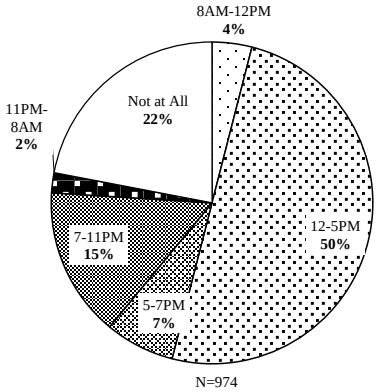
N=970

Saturday



N=977

Sunday



N=974

The intent behind the pie charts was three-fold:

First, I thought it would be clever to use pie charts because of their similarity to a clock. Second, I wanted to convey the particular time of day using increasingly dark shades of white/black/grey as night approached. Finally, I made the Monday-Thursday pie larger than each of the weekend day pie charts to illustrate that it represented 4/7ths of the days in a week.

Unfortunately, it is difficult to answer the question at hand with this pie chart visualization. The reader has to do too much work to figure out whether there are any patterns in the data.

The question we want to answer from the survey data is simply on which days of the week and at what times of day do graduate students say they are most likely to go to the library.

The data are summarized in a table as percentages of the responses for each day of the week and time of day.

Hours Most Likely to Use a Columbia Library

All Graduate Students

Time	M-Th	Fri	Sat	Sun
8AM-12	10%	12%	7%	4%
12-5PM	51%	53%	58%	50%
5-7PM	12%	12%	6%	7%
7-11PM	24%	10%	5%	15%
11PM-8AM	2%	1%	2%	2%
Not at All	1%	12%	22%	22%
N	1025	970	977	974

The series of bar charts below illustrate the steps I took to get to the final Chart 4, which I think provides the most easily understandable, simple and direct analysis of the survey data.
To generate Chart 2, I created a bar chart by day with the same color scheme for each of the time periods. It includes data labels of percentages that sum to 100 and a legend. As in the pie charts, it shows most students expect to go to the library between 12-5 p.m., but it is less clear what is happening for the other time periods.

Chart 2
Times of Day Most Likely to Use Libraries By Day
All Graduate Students

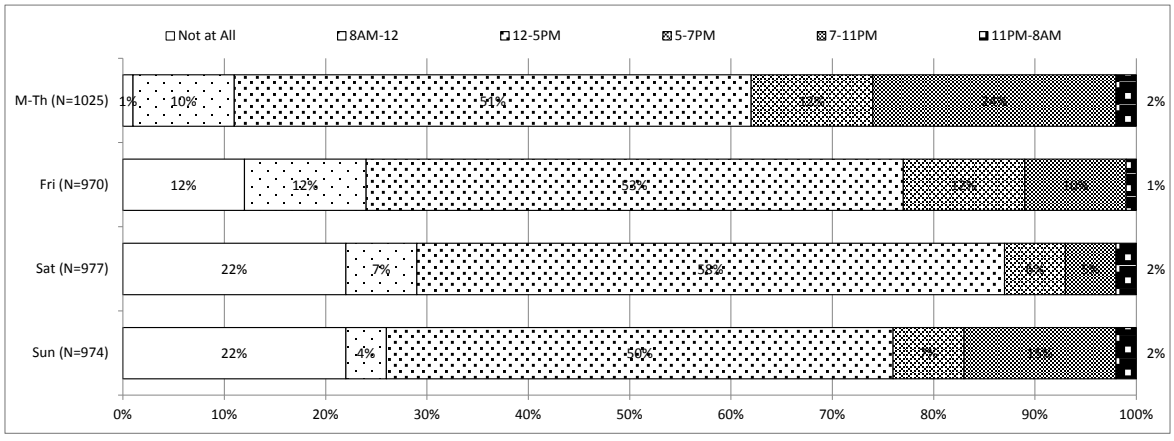
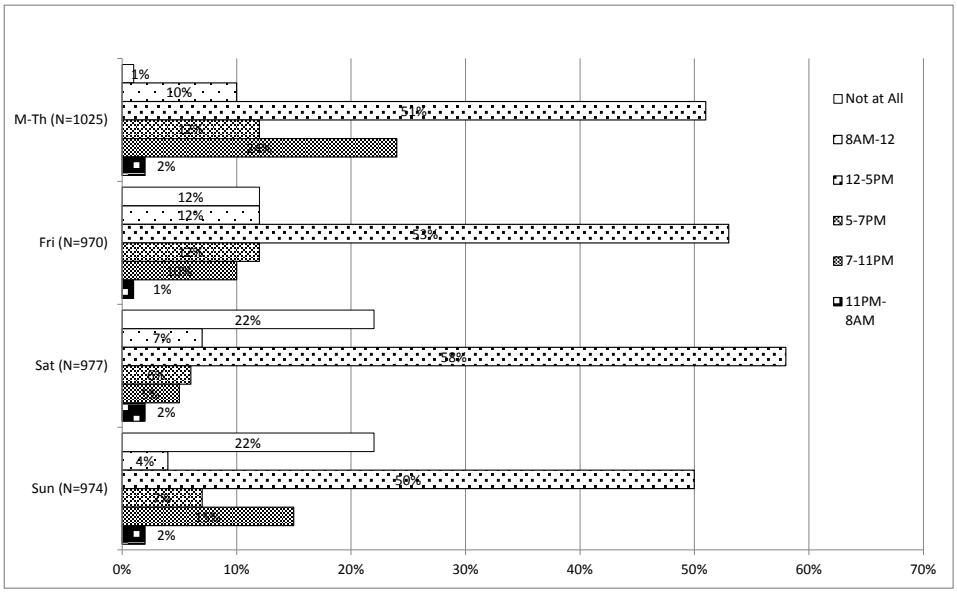


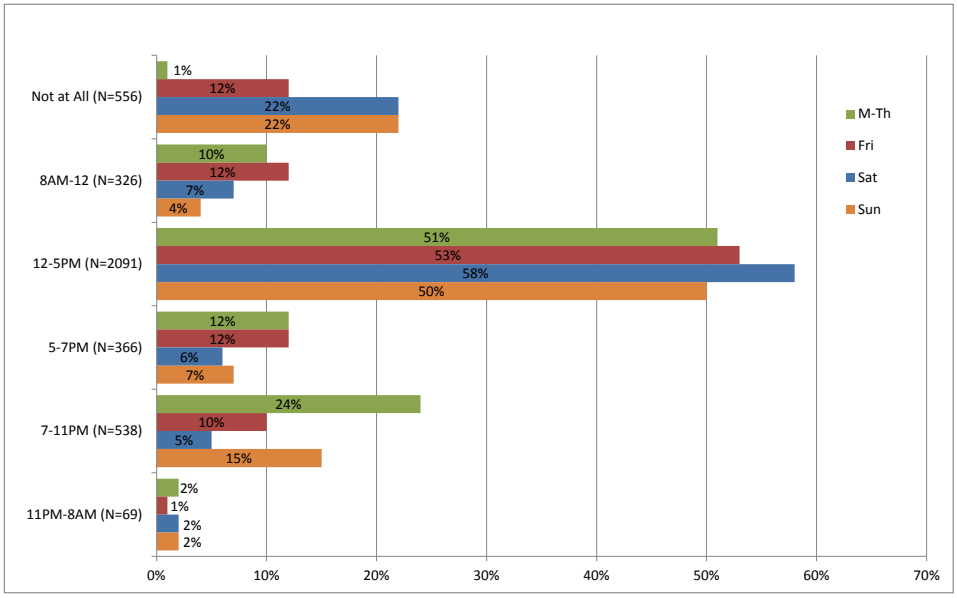
Chart 3 shows the times of day as separate bars by day in an effort to show comparisons by time within day. Rather than clarifying, it is still challenging to understand the patterns of use.

Chart 3
Times of Day Most Likely to Use Libraries By Day
All Graduate Students



Finally, if we switch the x and y-axes data as in Chart 4 so that time of day is along the y-axis and just go with the default colors, it is very obvious that regardless of the day of week, more that 50% of graduate students expect to go to the library between noon-5 p.m. Additionally, it is clear that the patterns of expected library use for the different time periods are very similar across all the days except in a couple of instances, "Not at All" and "7-11PM" on M-Th (Monday-Thursday).

Chart 4
Times of Day Most Likely to Use Libraries By Time Period
All Graduate Students



This is a good example of where trying to be too clever obscures an interesting, but uncomplicated finding.