Splash Staffing Analysis - Transactions

Allocate Analytics

February 21, 2019

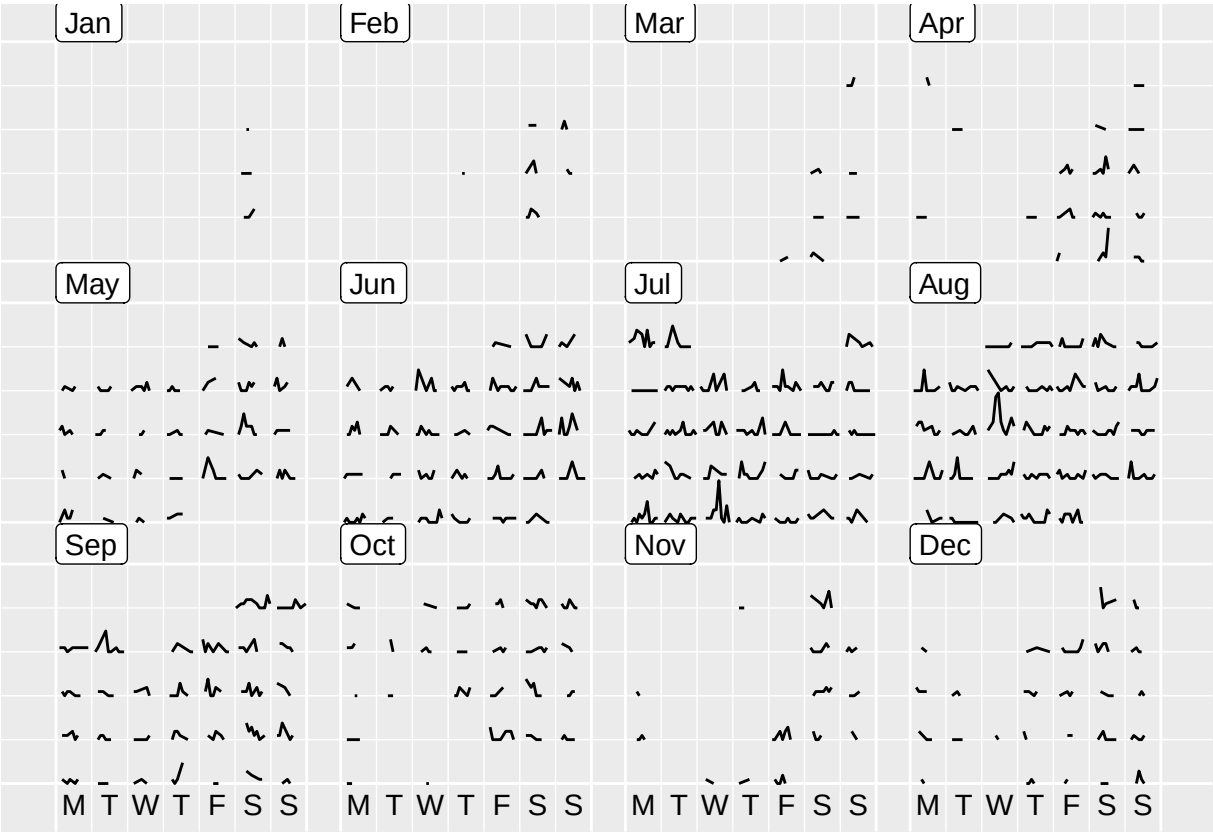
DISREGARD ALL TEXT

Question To Answer: How can sales data help inform staffing levels through the day through each month of the year?

Approach To Answer Question:

1. Visualize 2017 sales by hour for each day of the year in order to see trends (also visualize 2016 to confirm it's fairly similar to 2017)
2. Group together similar days into a number of "sales profiles" for consistency and simplicity.
3. Plot the range of sales that happen through the day for each of the profiles.

Sales By Hour For Each Day of 2018



Comments and Trends

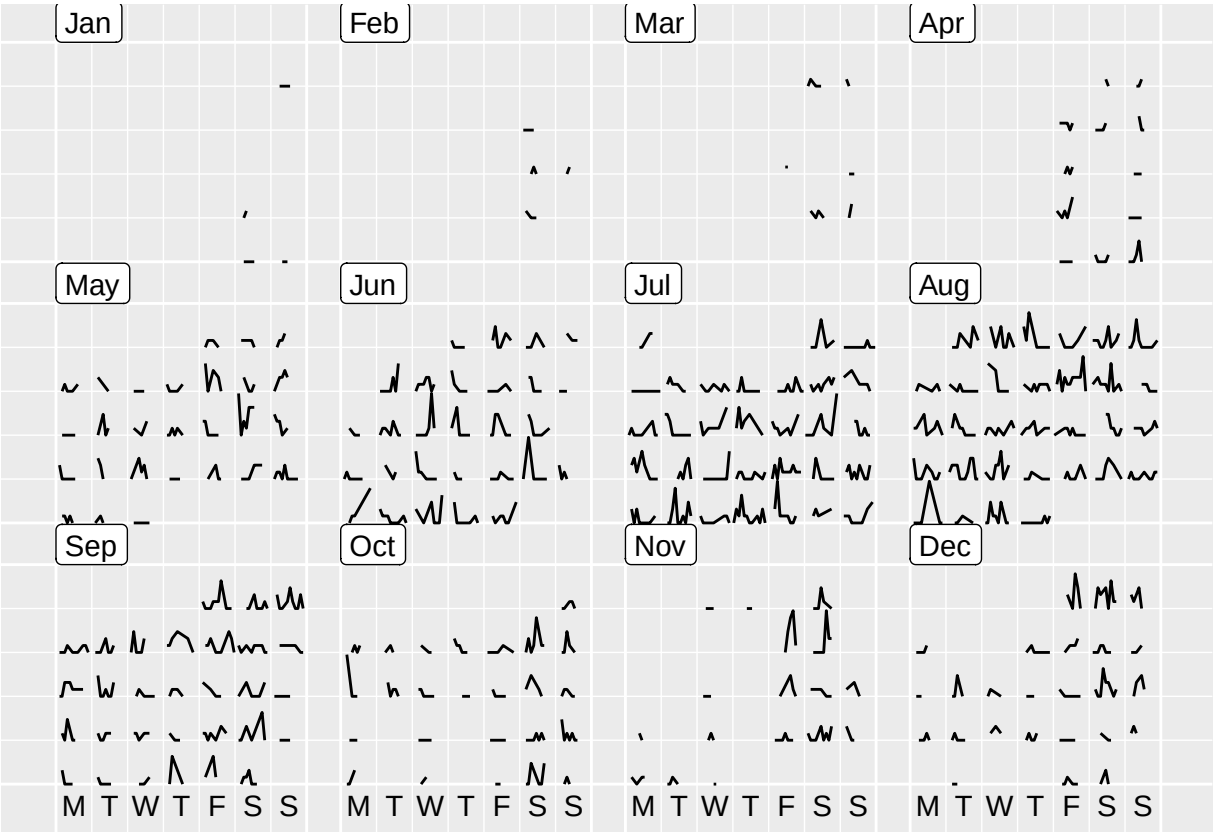
Trends were harder to identify for Splash. I began by just substituting the Splash data for the Whale's Tale data, but the dollar amounts differed wildly and almost randomly. I then switched from sales dollars to items sold but that similarly had unpredictable variation. Lastly, I looked at transaction data. The transaction data had fewer huge spikes but still the transactions followed almost a random pattern.

I came away thinking that working at the Splash location is a little bit like playing outfield in baseball. You might get no action for long periods, but you better be ready when the action does come.

There's a risk in analysis like this called overfitting such as saying "The 3rd Saturday in August was huge so next year schedule extra help just for that one day". I really couldn't find many patterns beyond expected monthly seasonality, but this by itself is a useful finding. I looked for trends like "Mornings on Weekdays are usually _____", "The final hours of the day are often _____", "the busiest time of day is _____", "the busiest or the lightest day of the week is _____", and none of them led to a solid trend.

In the end, I went with four profiles, as shown in the colors below. I haven't matched these to staffing levels because I haven't gotten as much info about how Splash is staffed; what the maximum and minimum staffing levels would be, etc. Still this should provide a useful picture of the possible transaction levels.

Sales By Hour For Each Day of 2017



Profiles of Sales For Staffing

Splash Staffing Profiles

1. Grey – Jan-Apr
2. Green – May, Jun, Sep
3. Blue – Jul-Aug
4. Pink – Oct-Dec

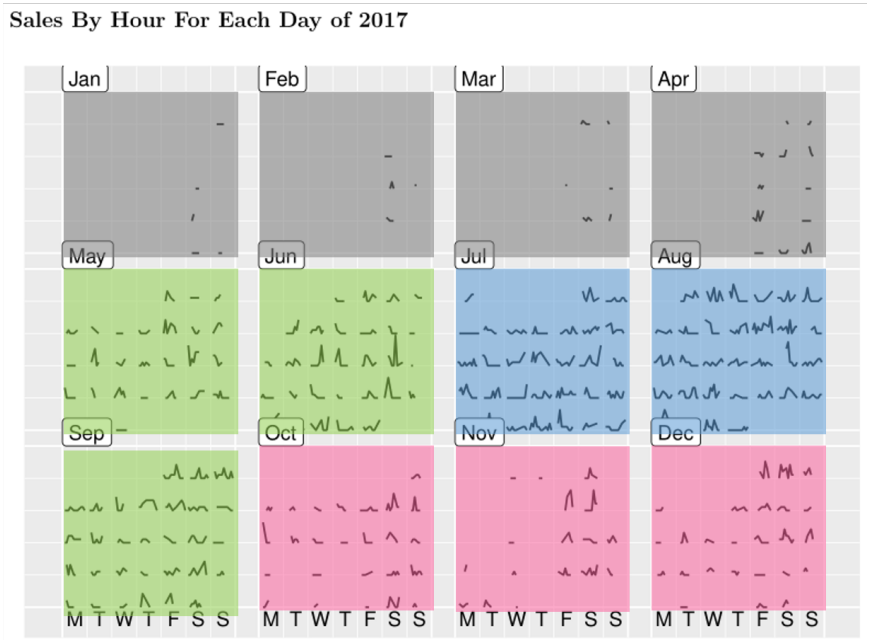


Figure 1: "Days of 2017 sorted into 4 profiles for staffing"

Sales Ranges of Profiles

The next 4 plots show the range of sales that have occurred for each hour of the day. The darkest, largest blue range represents where sales occur that hour 95% of the time. The next slightly lighter blue range represents where hourly sales will fall 75%. The smallest, lightest blue contains hourly sales 50% of the time. The red ribbon is the average sales level for that hour.

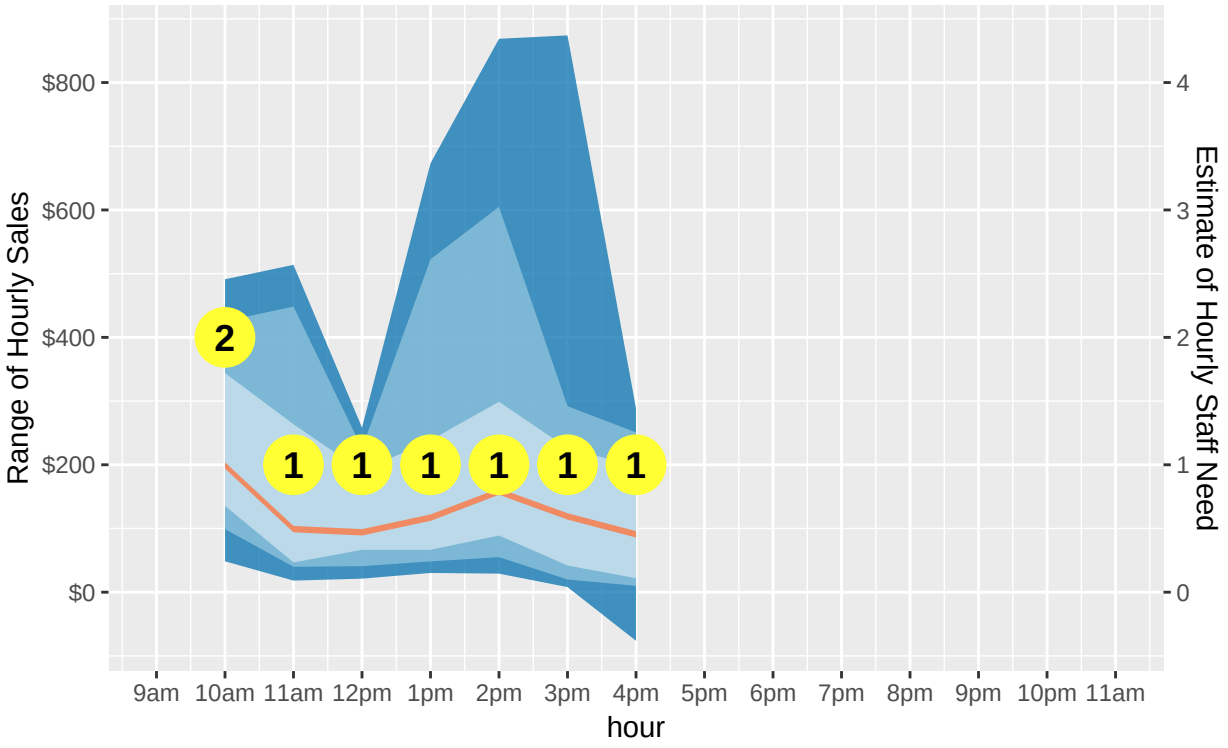
I have left the yellow dots with staffing levels on the plot despite the fact that they're calibrated based on the Whale's Tale staffing levels rather than Splash's. They can provide a helpful comparison with Whale's Tale data.

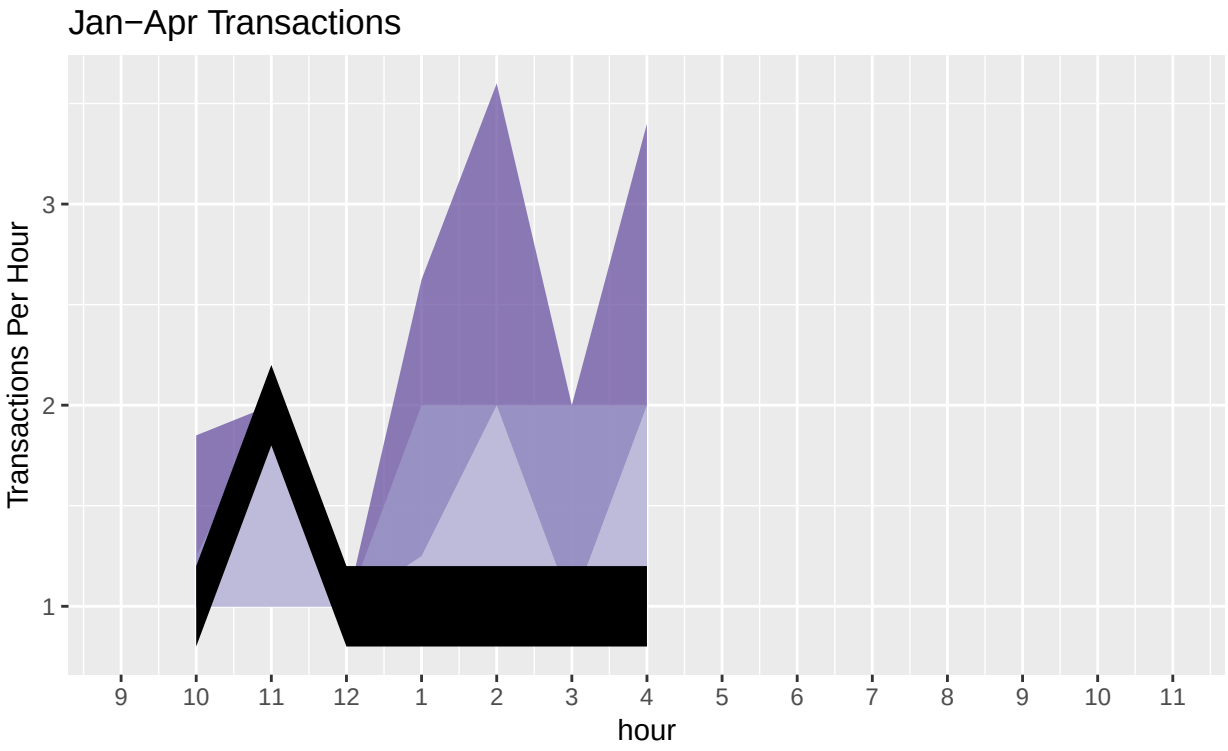
In purple is a similar plot based on transactions by hour rather than sales dollars by hour. The ranges for light purple, medium purple, and dark purple are the same as described above for the blues.

Approximate Staffing Needs At Hourly Sales Levels

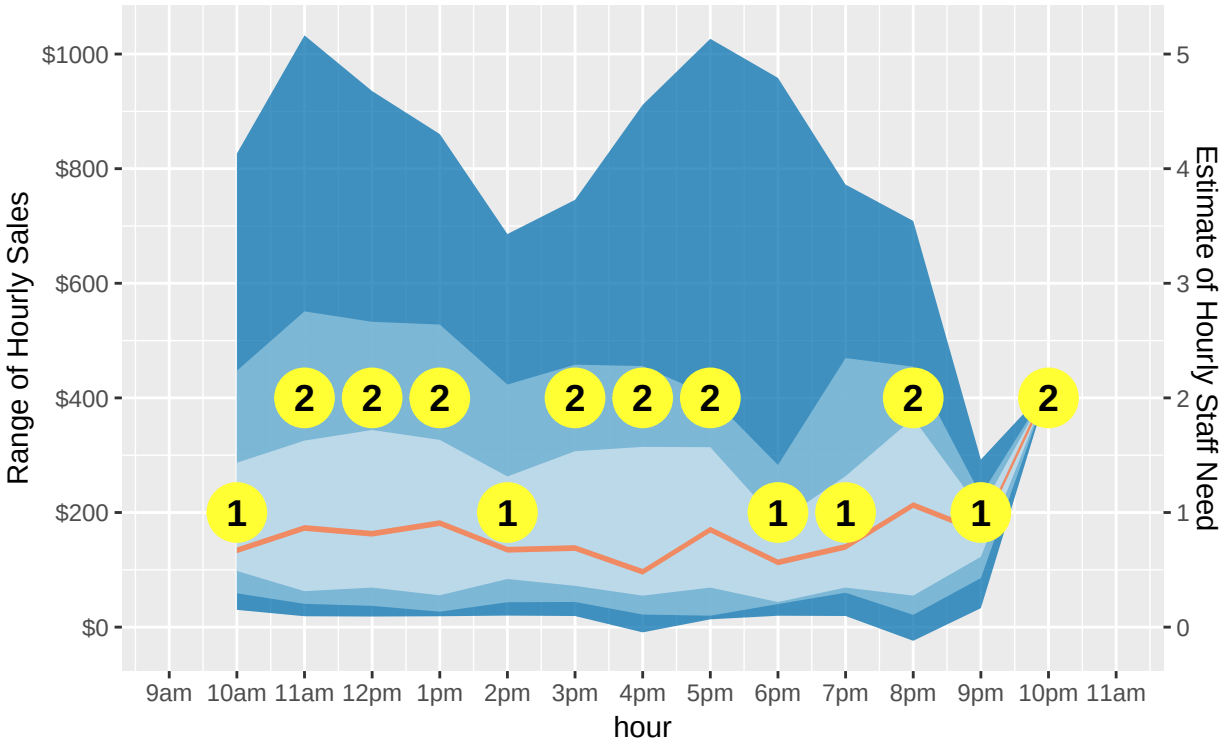
Below are the plots of each profile:

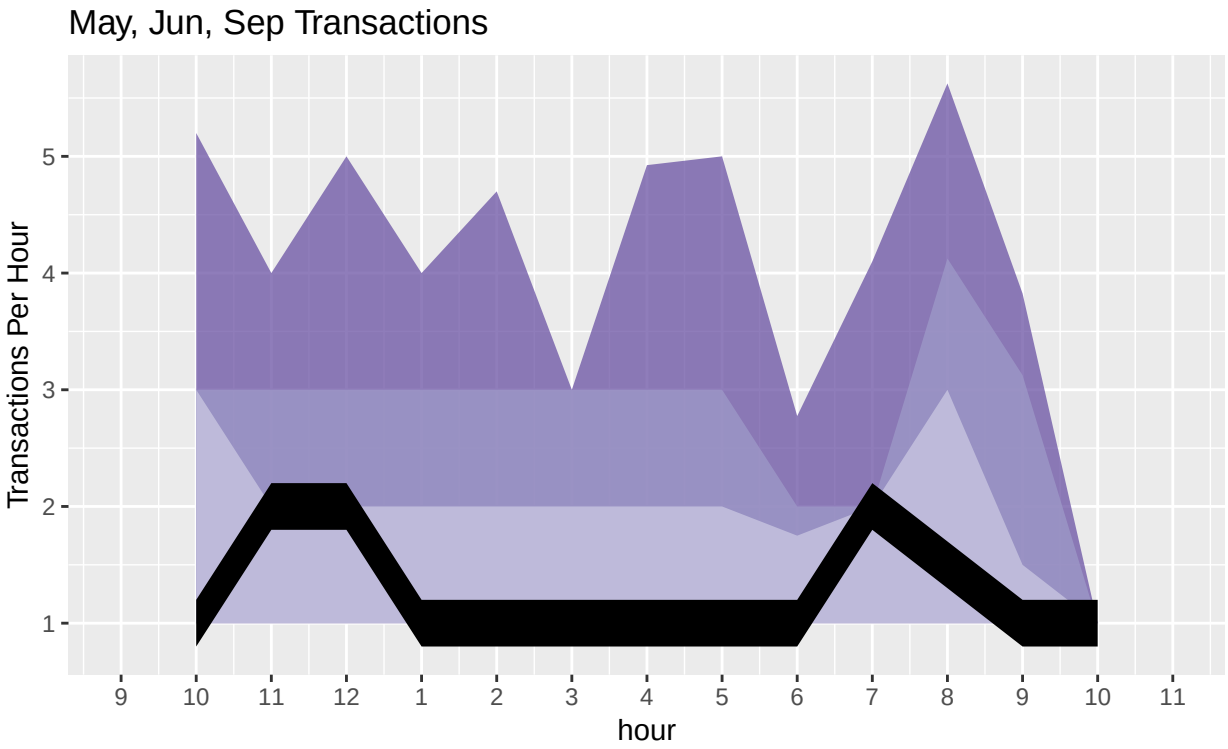
#1 Jan-Apr - Grey



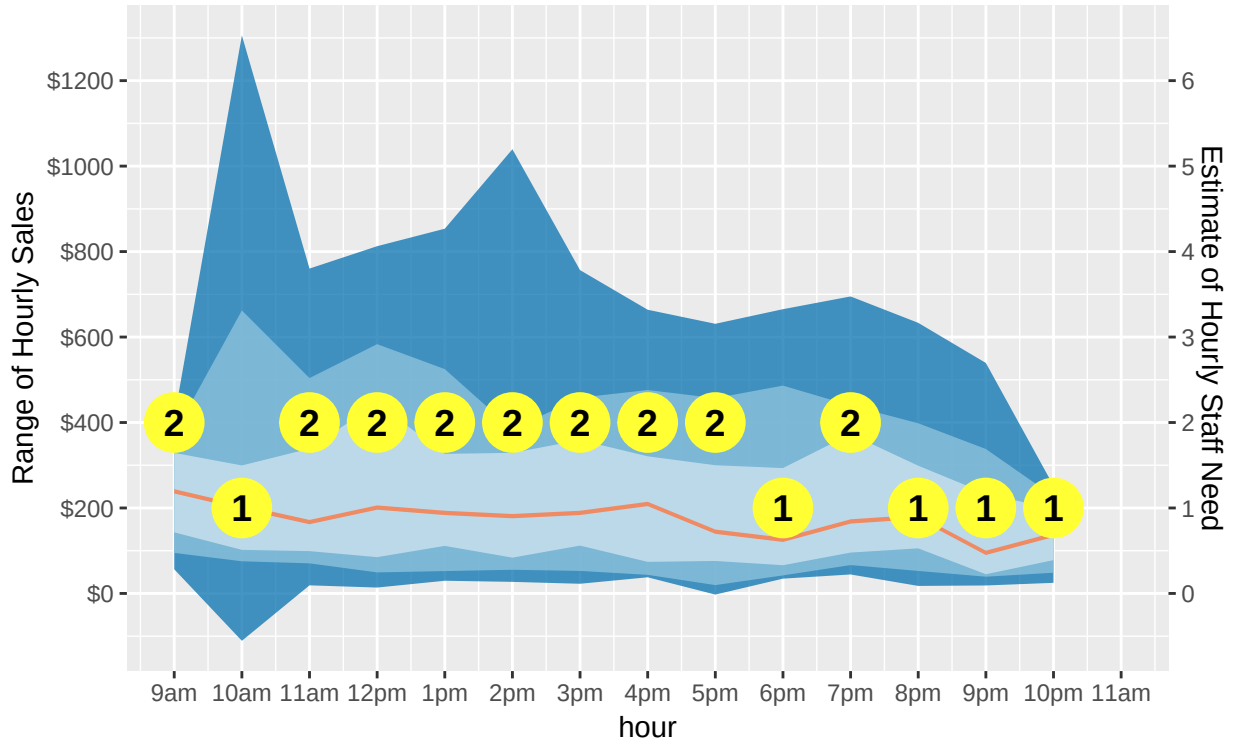


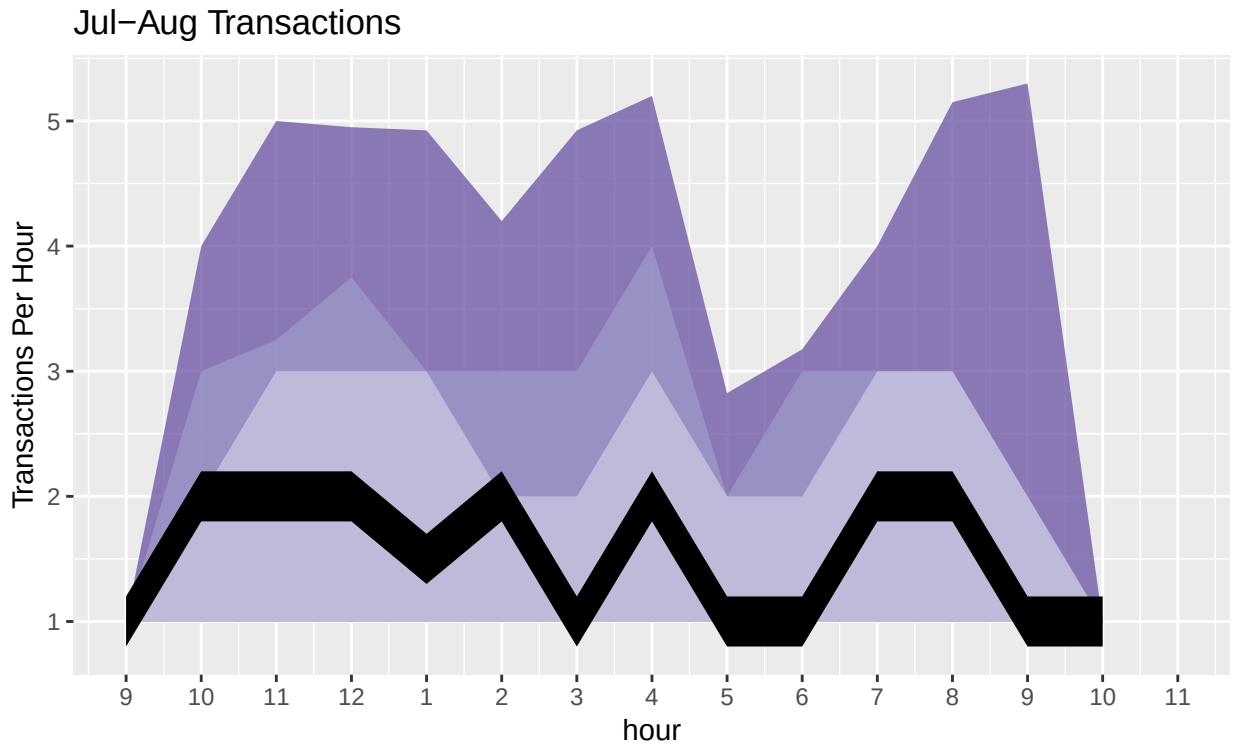
#2 May, Jun, Sep - Green





#3 Jul-Aug - Blue





#4 Oct-Dec - Pink