IS606_Collaborate_Markdown_1

Initial Thoughts

An initial question to be answered is whether the answer to this question should be a probabilistic one or a simulation. While a statistician might initially choose the first, the second is better to actually see results.

Assumptions

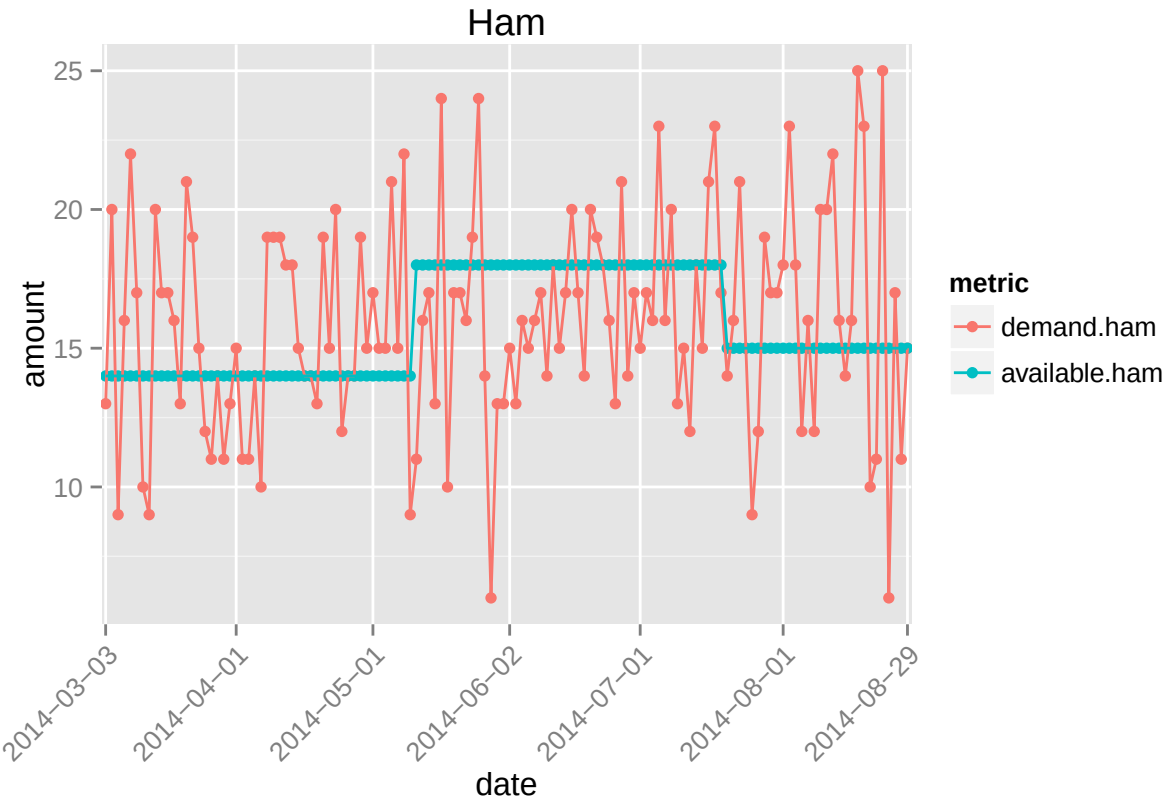
Our assumptions include:

- Customers and the orders they make are independent of each other
  - While this may not be true in the real world, as someone's order may influence the order of the next person, it is easier to pretend that they are not

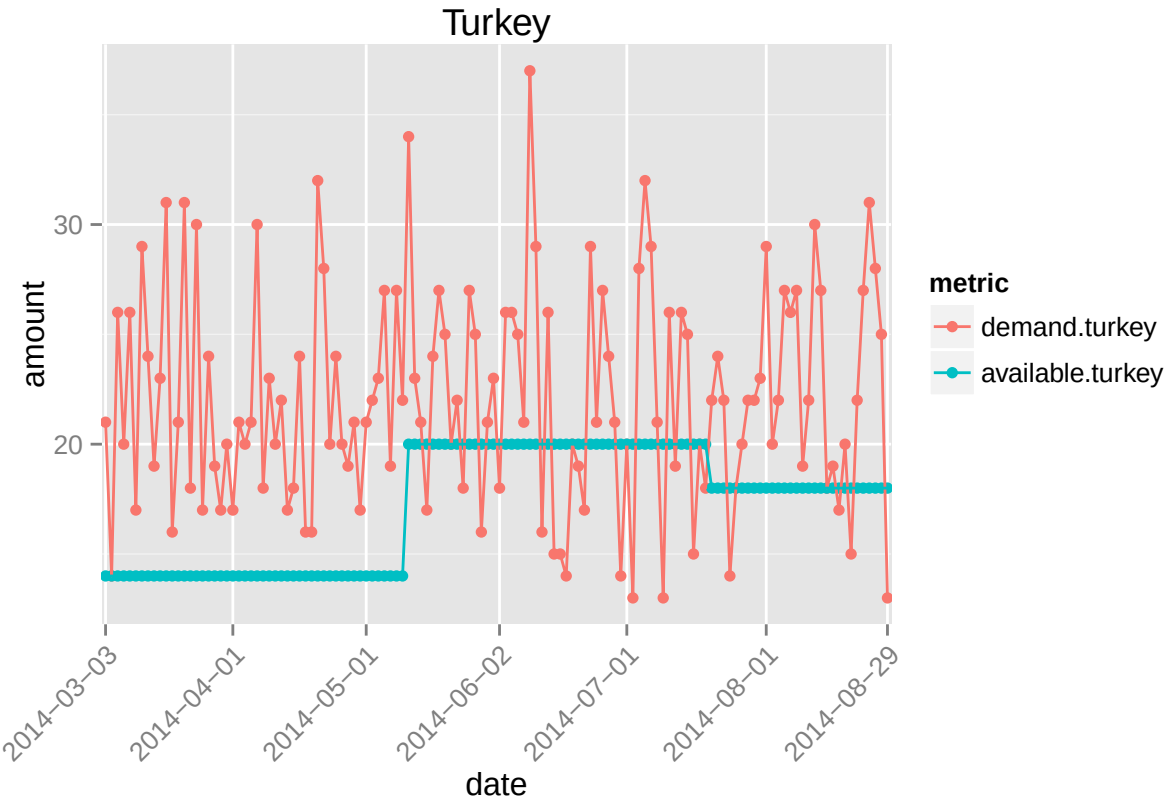
First Look

```
library(ggplot2)
library(reshape2)
details <- read.csv("details.csv", header=T)
sales <- read.csv("sales.csv", header=T)
attach(sales)
demand <- melt(sales[1:4], id.vars="date", variable.name="type", value.name="demand")
supply <- melt(sales[c(1,5,6,7)], id.vars="date", variable.name="type", value.name="supply")
ham <- melt(sales[c(1,2,5)], id.vars="date", variable.name="metric", value.name="amount")
turkey <- melt(sales[c(1,3,6)], id.vars="date", variable.name="metric", value.name="amount")
veggie <- melt(sales[c(1,4,7)], id.vars="date", variable.name="metric", value.name="amount")
plotHam <- ggplot(data=ham, aes(x=date, y=amount, group=metric, color=metric)) + geom_point() + geom_li
theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
scale_x_discrete(breaks=c("2014-03-03", "2014-04-01", "2014-05-01", "2014-06-02", "2014-07-01", "2014-0
ggtitle("Ham")
plotTurkey <- ggplot(data=turkey, aes(x=date, y=amount, group=metric, color=metric)) + geom_point() + g
theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
scale_x_discrete(breaks=c("2014-03-03", "2014-04-01", "2014-05-01", "2014-06-02", "2014-07-01", "2014-0
ggtitle("Turkey")
plotVeggie <- ggplot(data=veggie, aes(x=date, y=amount, group=metric, color=metric)) + geom_point() + g
theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
scale_x_discrete(breaks=c("2014-03-03", "2014-04-01", "2014-05-01", "2014-06-02", "2014-07-01", "2014-0
ggtitle("Veggie")
```

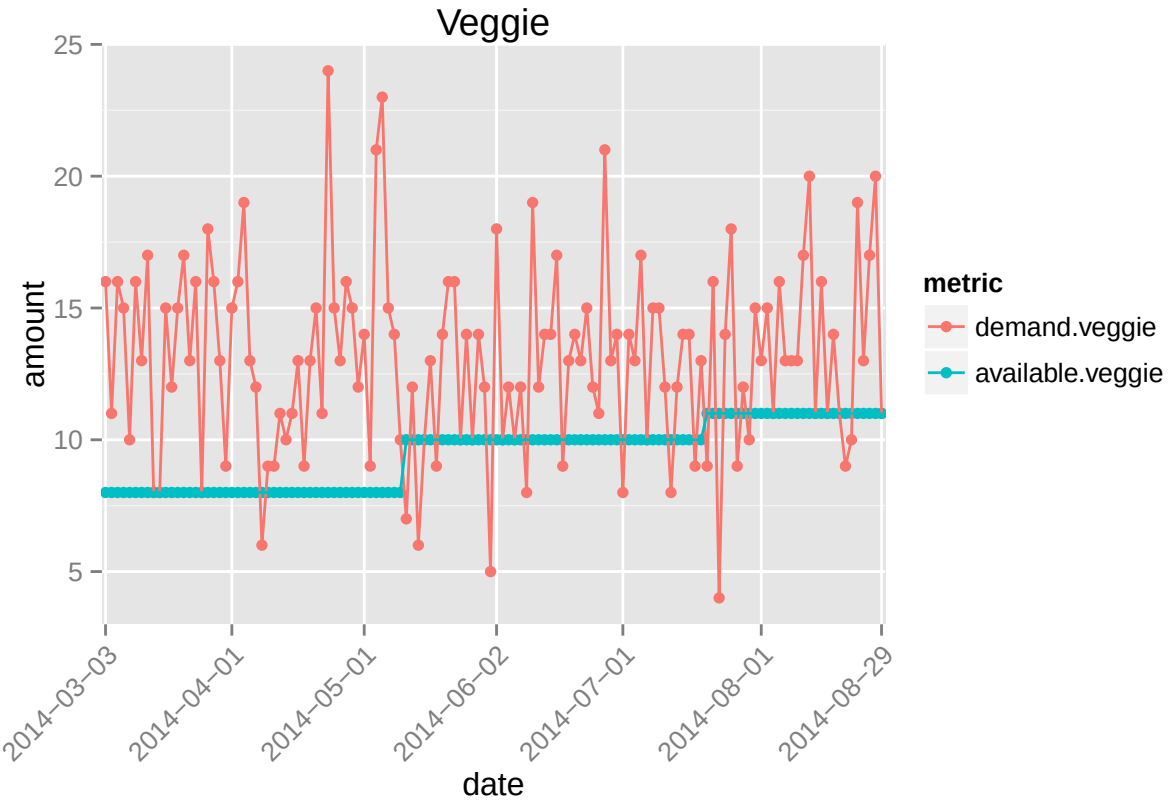
```
plotHam
```


Ham
amount
25
20
15
10
2014-03-03
2014-04-01
2014-05-01
2014-06-02
2014-07-01
2014-08-01
2014-08-29
date
metric
demand.ham
available.ham

```
plotTurkey
```


Turkey
amount
30
20
2014-03-03
2014-04-01
2014-05-01
2014-06-02
2014-07-01
2014-08-01
2014-08-29
date
metric
demand.turkey
available.turkey

```
plotVeggie
```



Analysis of Historical Data

Why Poisson distribution

Simulation

Assuming there is no storage of sandwiches after each day

Assuming there is storage of unsold sandwiches after each day

Interpretations and Recommendations