

Heatmaps in R

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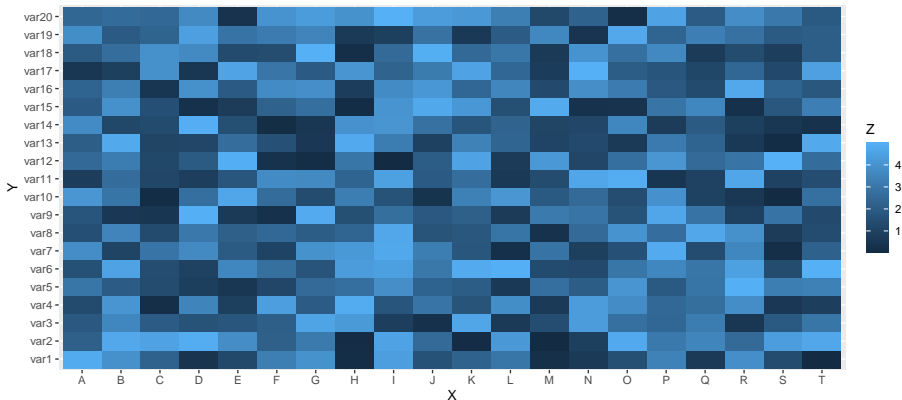
Section 1

What is a heatmap?

What is a heatmap?

A heatmap is graphic that will display your data in a colorful grid. This is great for seeing trends and patterns in your data.

```
ggplot(data, aes(X, Y, fill = Z)) +  
  geom_tile()
```



Advantages

Disadvantages

When to use a heatmap

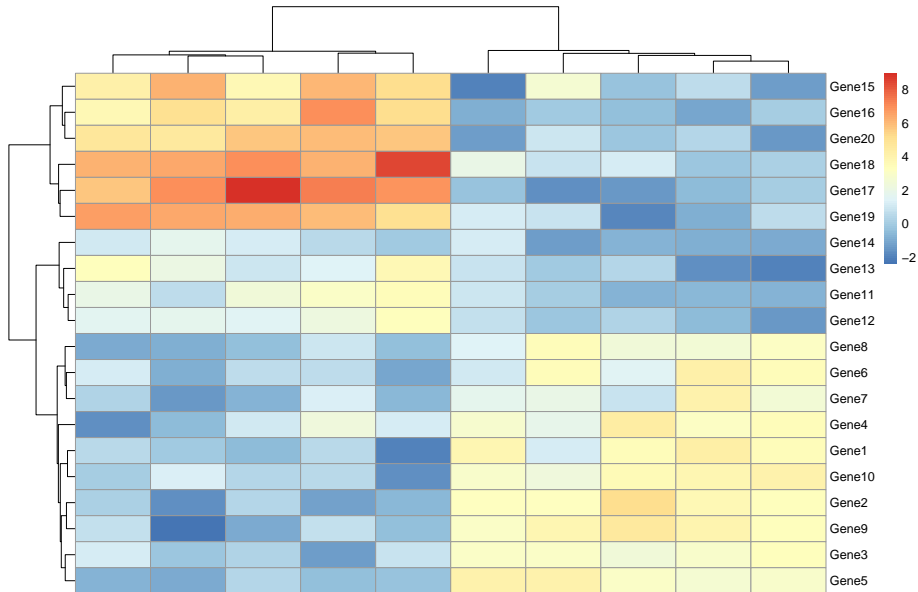
Section 2

Pheatmap Package

Pheatmap Package

Pheatmap (Pretty Heatmaps) is a package for R that supercharges heatmaps and allows you to create incredibly complex heatmaps.

Basic functions

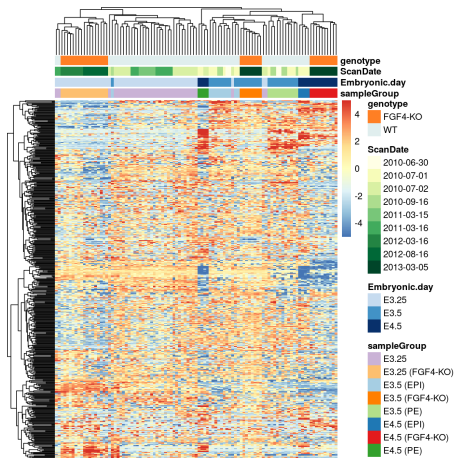


Dendrogram

Example Pheatmap

More Complex Example

Genes



Section 3

Applying Heatmaps

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First we get our data ready.

```
x <- flights %>%  
  filter(arr_delay > 0) %>%  
  group_by(month, carrier) %>%  
  summarize(total_delay = sum(arr_delay / 60)) %>%  
  arrange(month, carrier)
```

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Then we transform it into a matrix for Pheatmap.

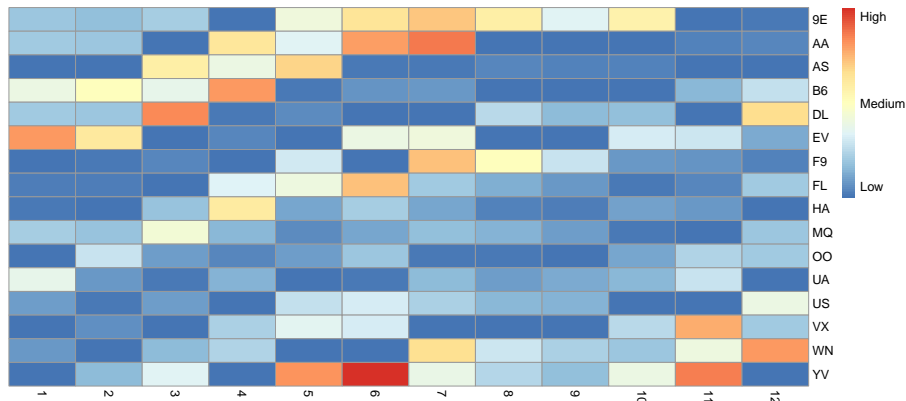
```
mat <- matrix(x$total_delay, nrow = 16)
rownames(mat) <- unique(x$carrier)
colnames(mat) <- unique(x$month)
```


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And finally we plot it.

```
pheatmap(mat,  
  cluster_row = FALSE,  
  cluster_cols = FALSE,  
  legend_breaks = c(150, 1200, 2300),  
  legend_labels = c("Low", "Medium", "High")  
)
```

NYC13Flights



MPG

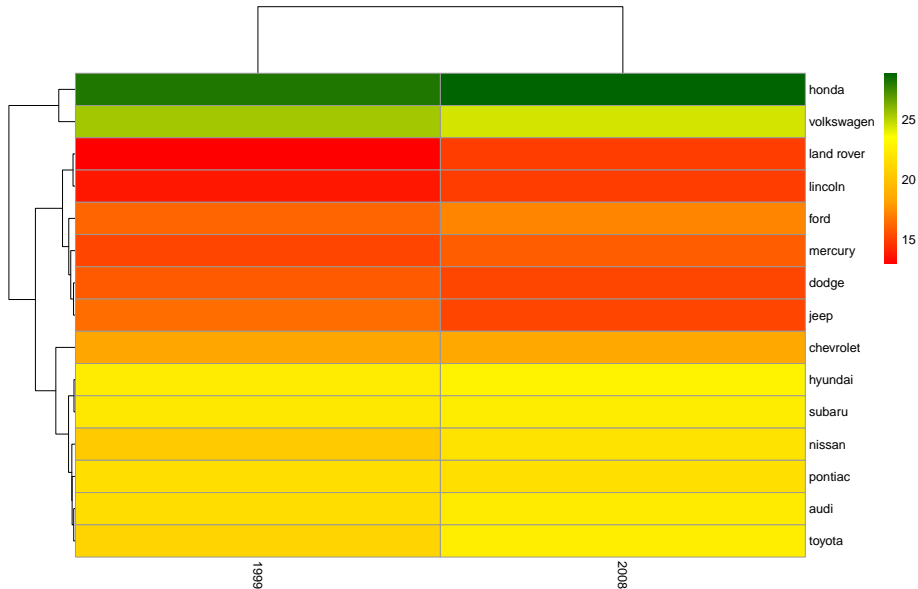
Let's do it with a simpler dataset we're familiar with. We start by getting summarizing our data.

```
x <- mpg %>%
  group_by(year, manufacturer) %>%
  mutate(avg_mpg = (cty + hwy) / 2) %>%
  summarize(avg_mpg = mean(avg_mpg)) %>%
  arrange(year, manufacturer)
```

We create a matrix and then plot it.

```
mat <- matrix(x$avg_mpg, nrow = 15)
rownames(mat) <- unique(x$manufacturer)
colnames(mat) <- unique(x$year)
pheatmap(mat,
  color = colorRampPalette(
    c("red", "orange", "yellow", "darkgreen")
  )(1000),
)
```

MPG



Section 4

Wrapping up
