3_Bar_Graphs

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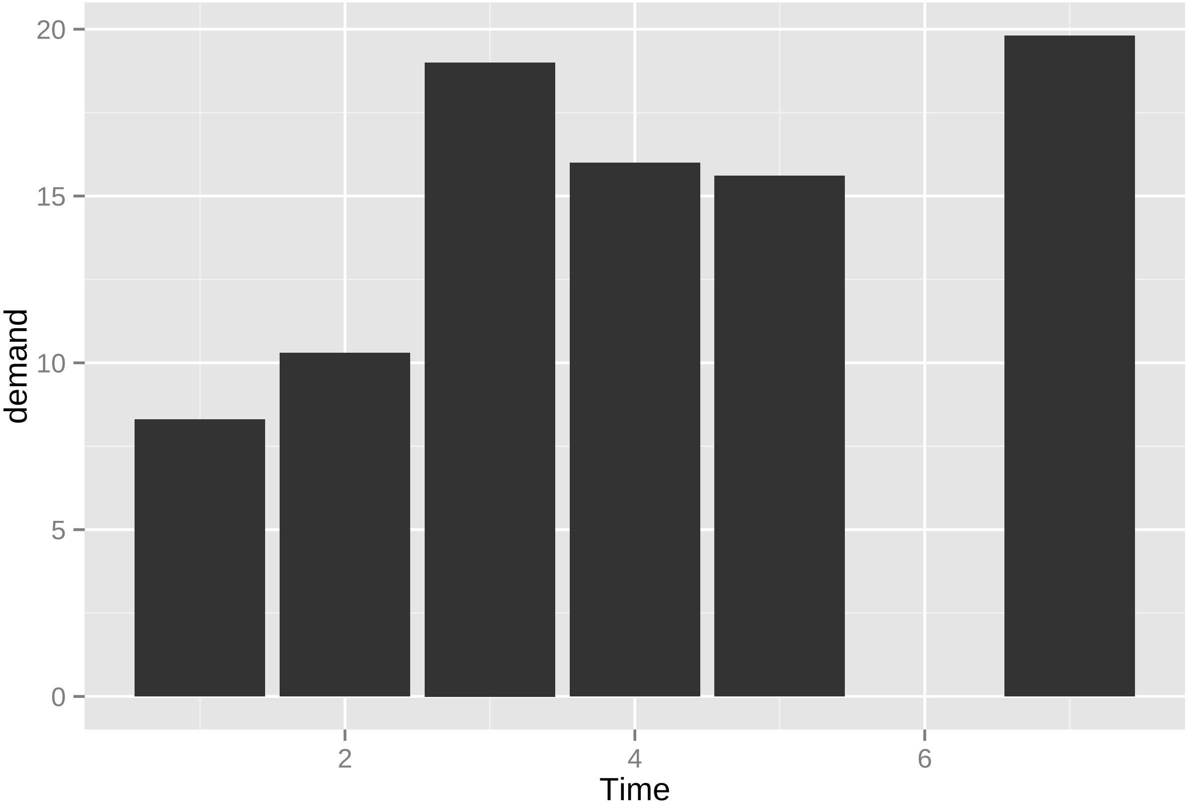
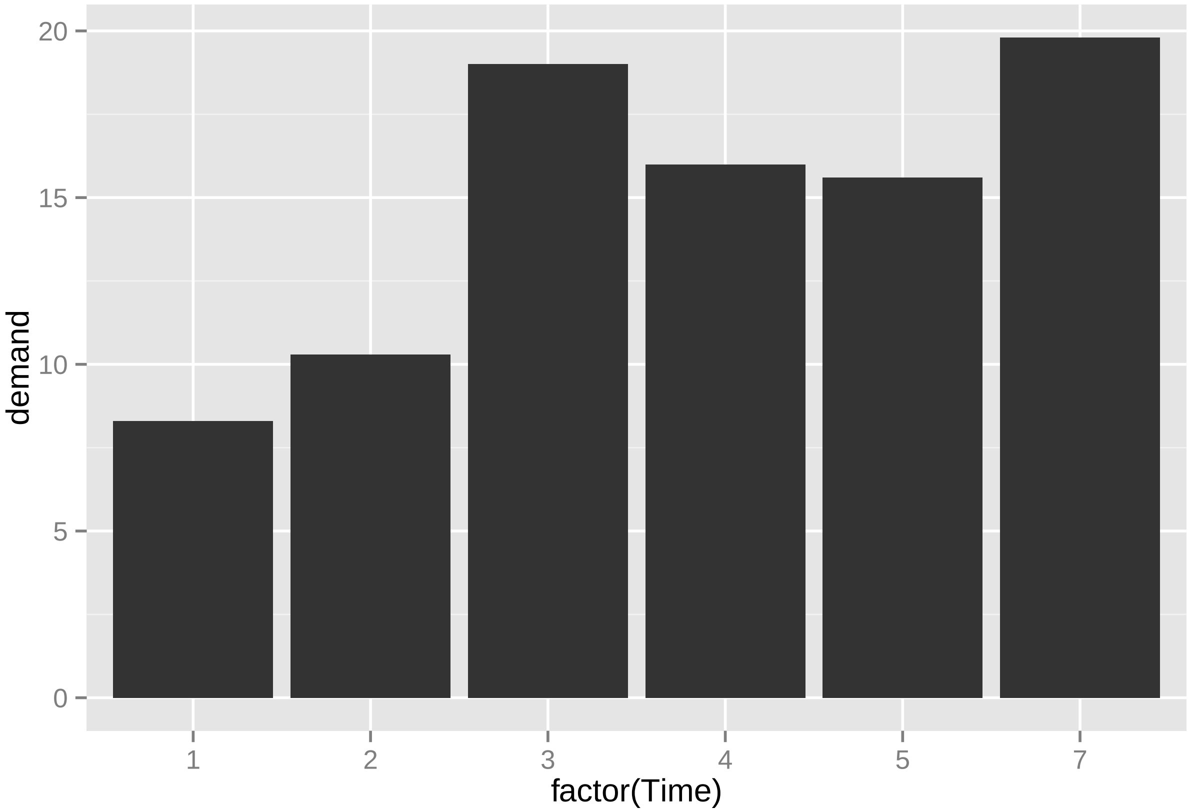
1. Making a Basic Bar Graph

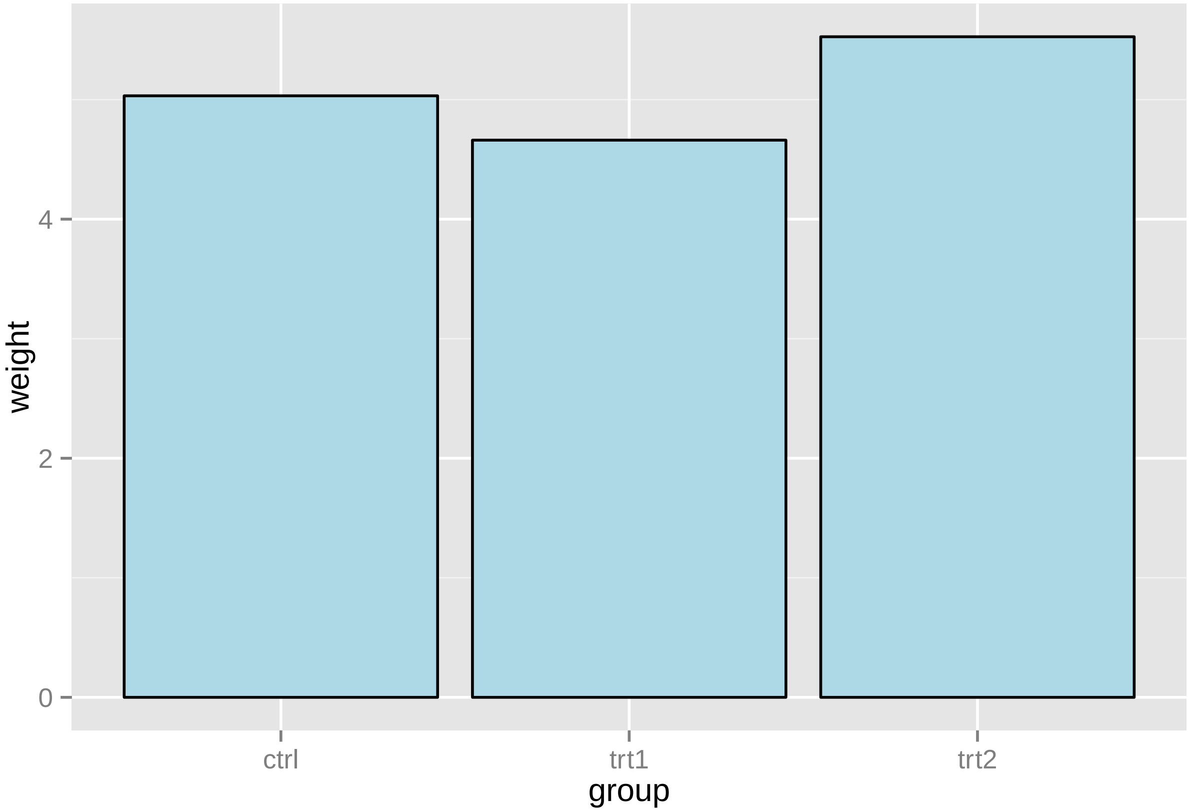
```
library(ggplot2)
library( gcookbook) # For the data set

library(plyr) ##


ggplot( BOD, aes( x = Time, y = demand)) + geom_bar( stat ="identity")
```



```
ggplot( BOD, aes( x = factor( Time), y = demand)) + geom_bar( stat ="identity")
```

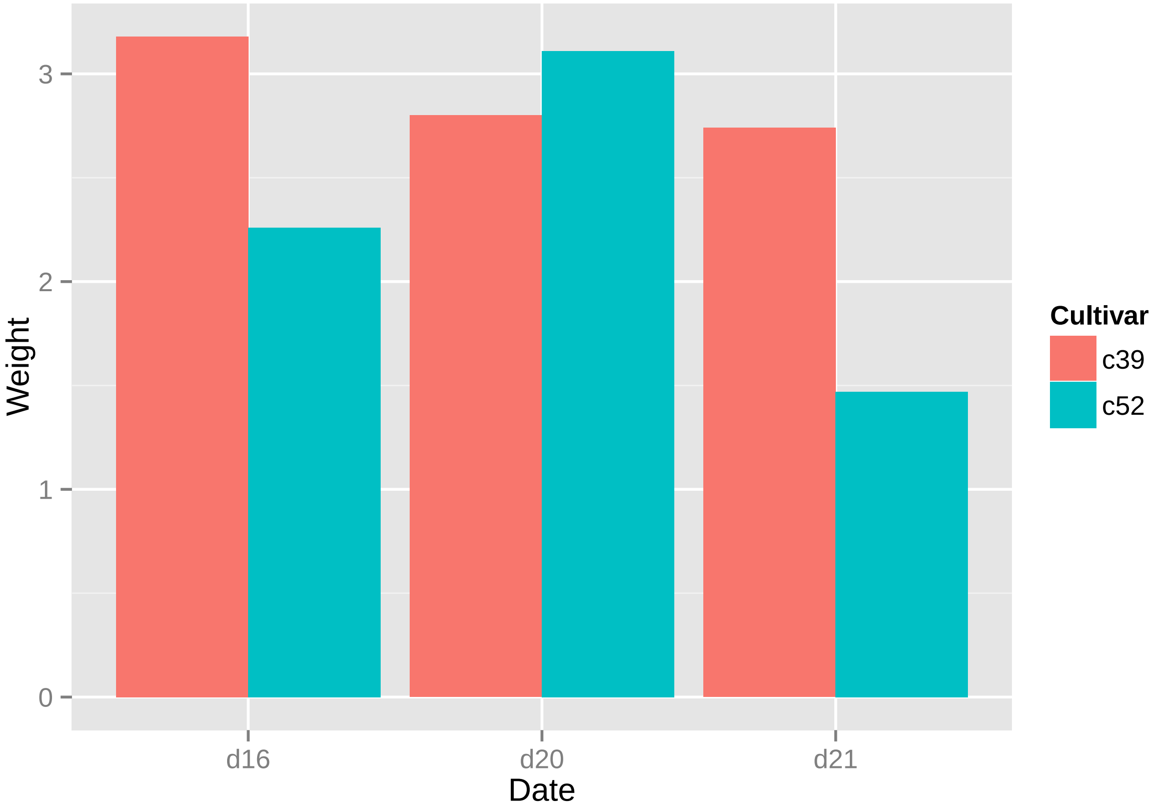


```
ggplot( pg_mean, aes( x = group, y = weight)) + geom_bar( stat ="identity", fill ="lightblue", colour =
```

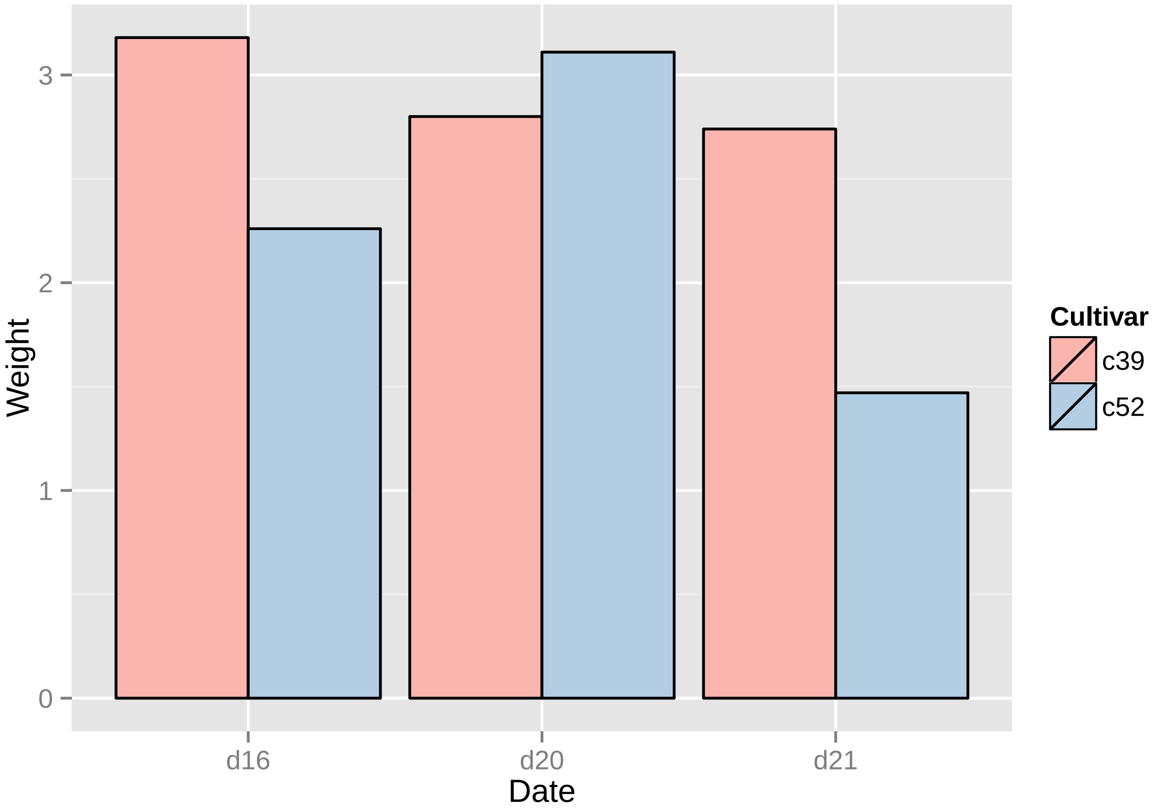


2. Grouping Bars Together

```
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( position ="dodge", stat ="identity")
```

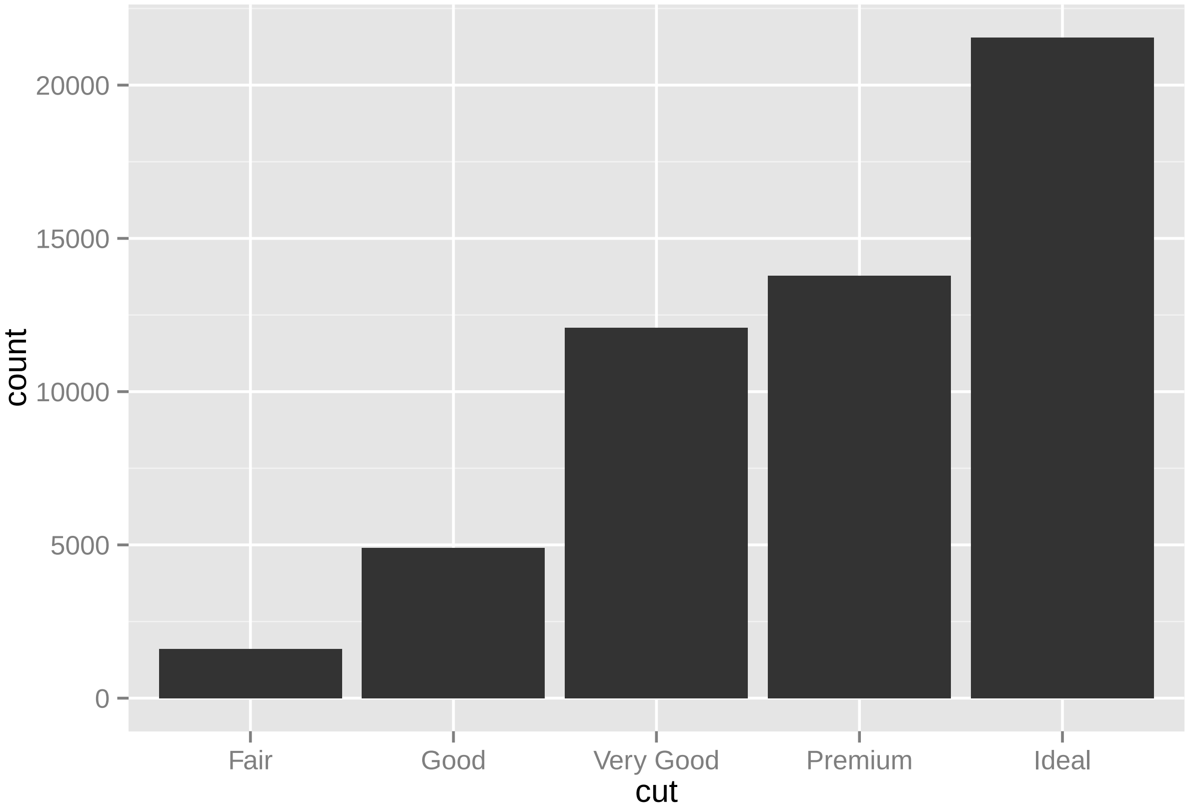


```
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( position ="dodge", colour ="black", stat ="identity") +
  scale_fill_brewer( palette ="Pastel1")
```



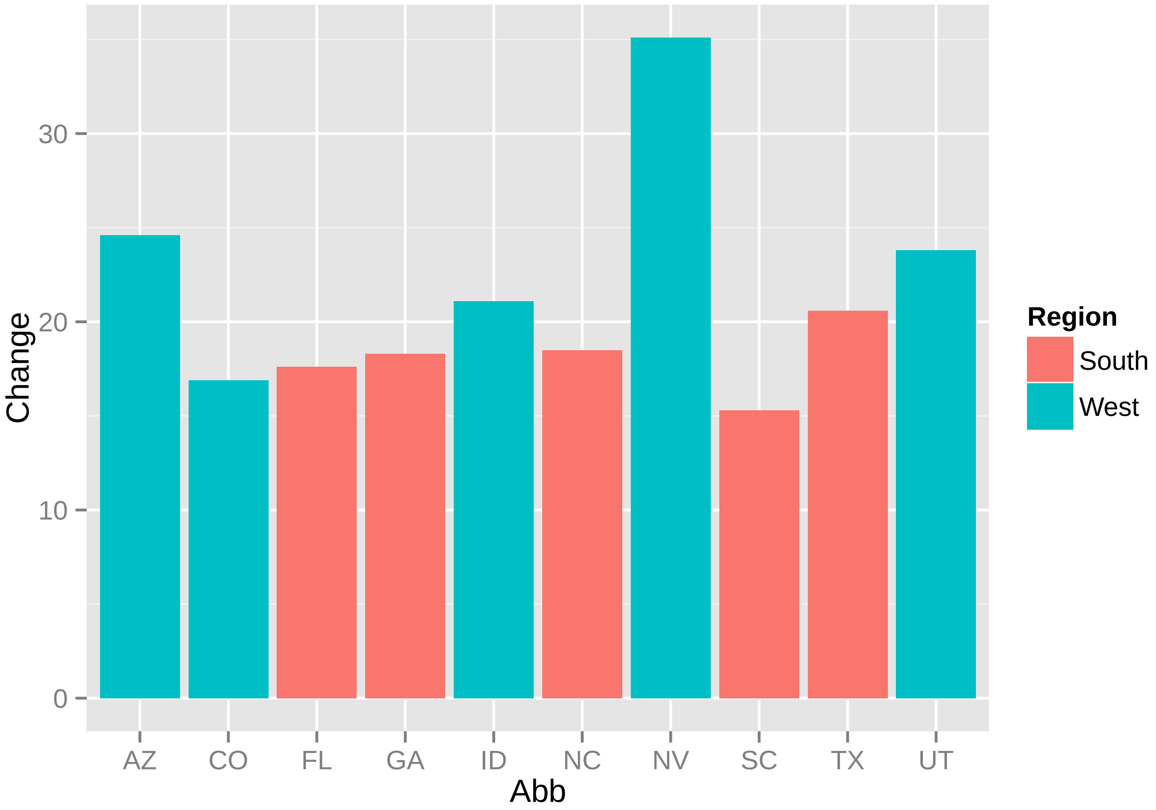
3. Making a Bar Graph of Counts

```
ggplot( diamonds, aes( x = cut)) + geom_bar()
```

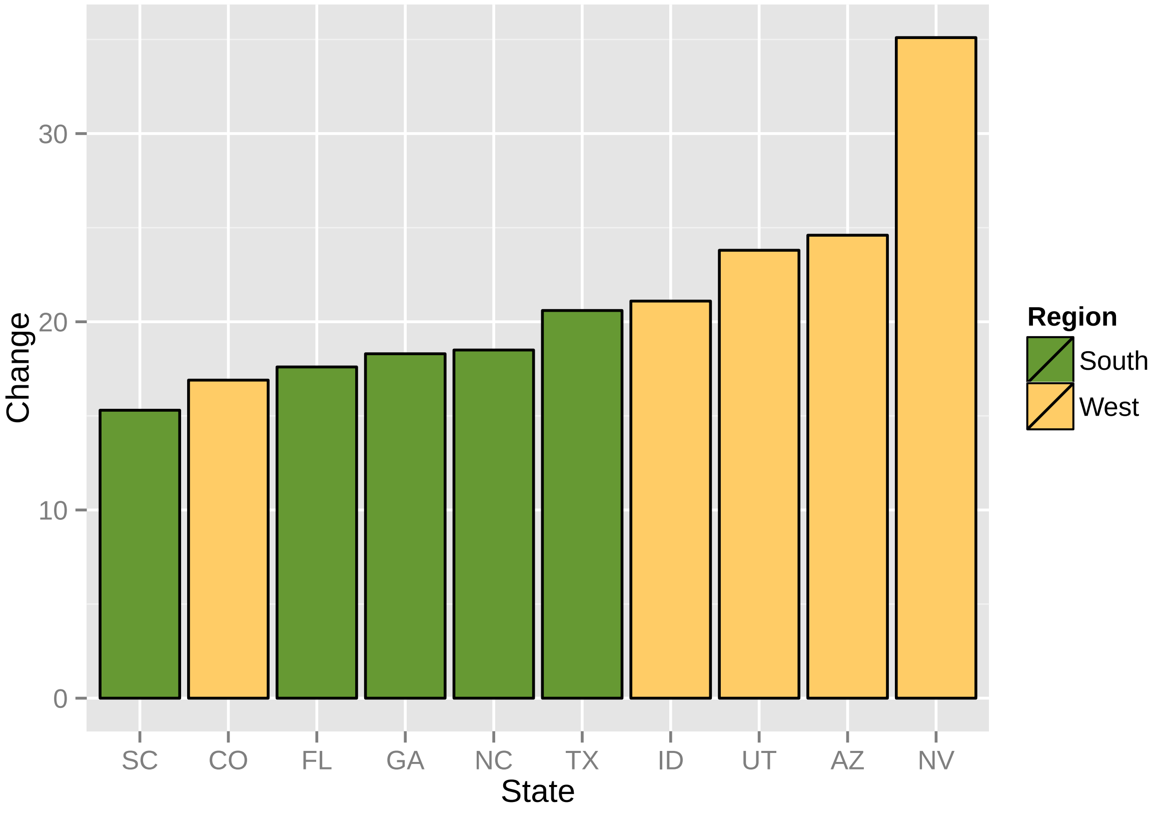


4. Using Colors in a Bar Graph

```
upc <- subset( uspopchange, rank( Change) > 40)

ggplot( upc, aes( x = Abb, y = Change, fill = Region)) + geom_bar( stat ="identity")
```



```
ggplot( upc, aes( x = reorder( Abb, Change), y = Change, fill = Region)) +
  geom_bar( stat ="identity", colour ="black") +
  scale_fill_manual( values = c("#669933", "#FFCC66")) + xlab("State")
```

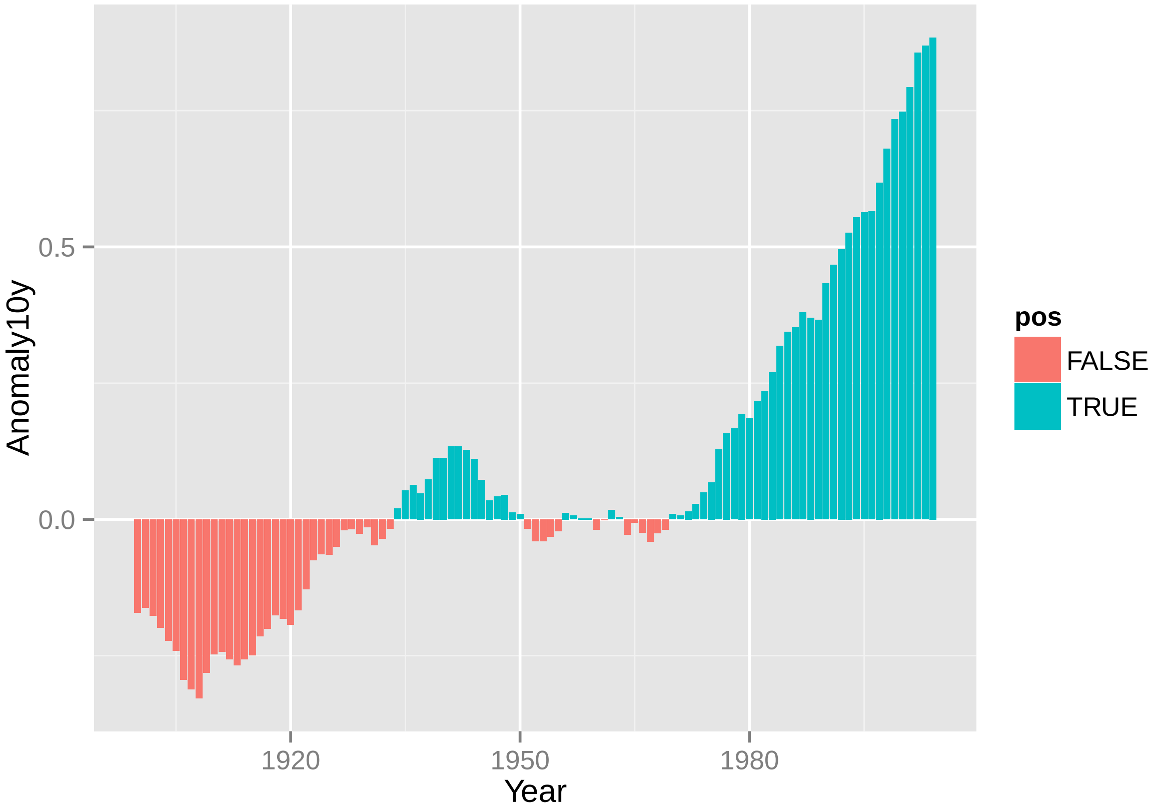


5. Coloring Negative and Positive Bars Differently

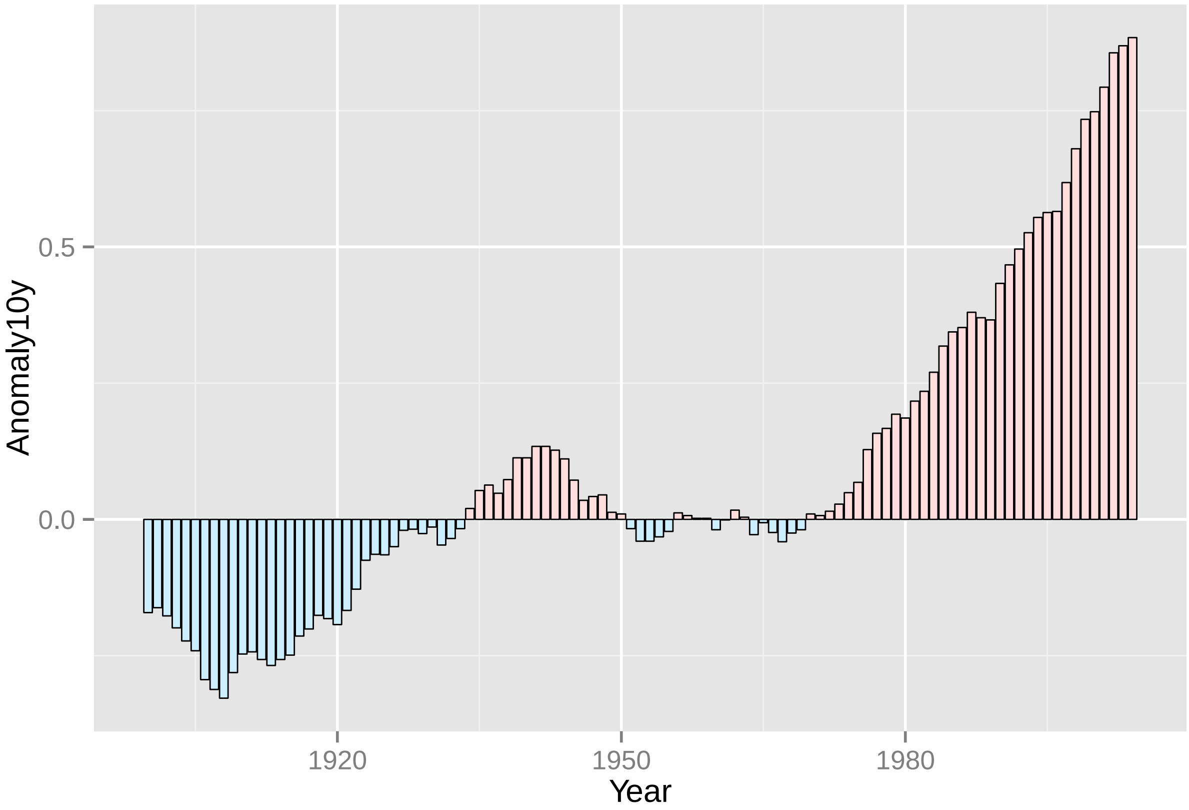
```
csub <- subset( climate, Source =="Berkeley" & Year >= 1900)
csub$pos <- csub$Anomaly10y >= 0
head(csub)
```

```
##       Source Year Anomaly1y Anomaly5y Anomaly10y Unc10y   pos
## 101 Berkeley 1900        NA        NA     -0.171  0.108 FALSE
## 102 Berkeley 1901        NA        NA     -0.162  0.109 FALSE
## 103 Berkeley 1902        NA        NA     -0.177  0.108 FALSE
## 104 Berkeley 1903        NA        NA     -0.199  0.104 FALSE
## 105 Berkeley 1904        NA        NA     -0.223  0.105 FALSE
## 106 Berkeley 1905        NA        NA     -0.241  0.107 FALSE
```

```
ggplot( csub, aes( x = Year, y = Anomaly10y, fill = pos)) +
  geom_bar( stat ="identity", position ="identity")
```



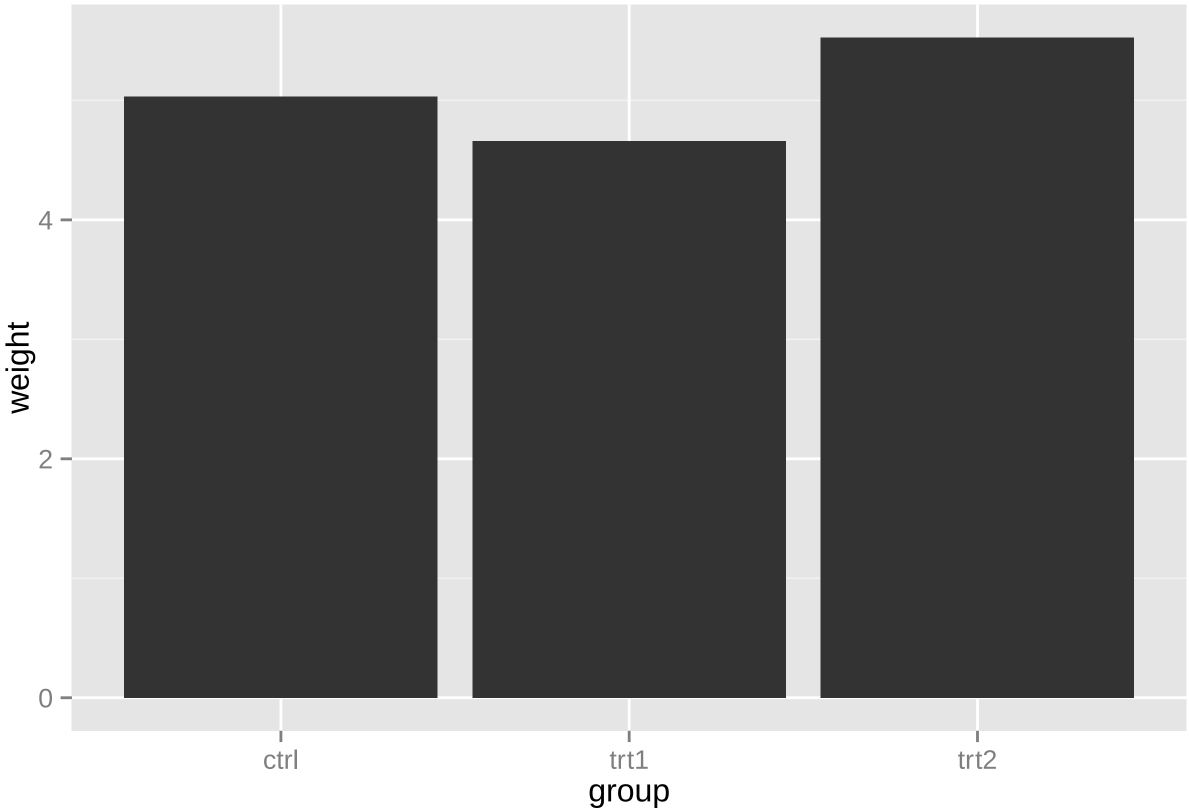
```
ggplot( csub, aes( x = Year, y = Anomaly10y, fill = pos)) +
  geom_bar( stat ="identity", position ="identity", colour ="black", size = 0.25) +
  scale_fill_manual( values = c("#CCEEFF", "#FFDDDD"), guide = FALSE)
```



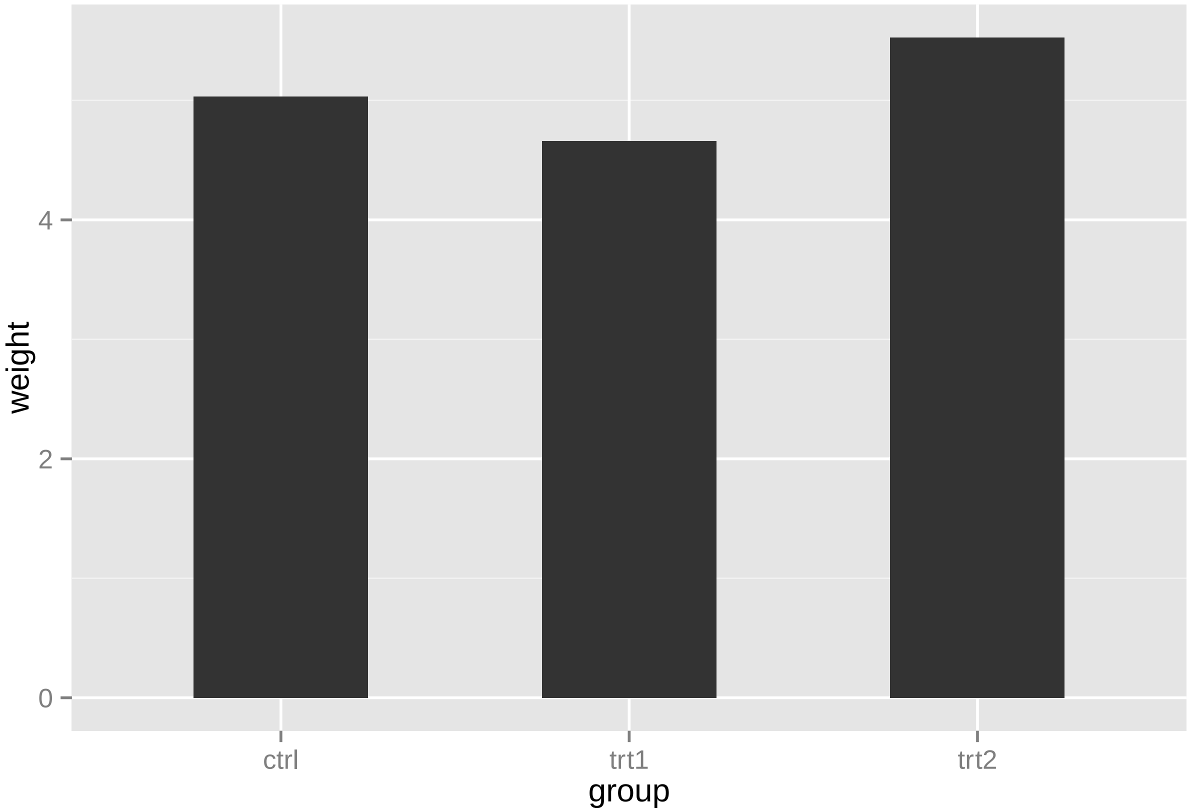
6. Adjusting Bar Width and Spacing

To make the bars narrower or wider, set **width** in geom_bar(). The default value is 0.9.

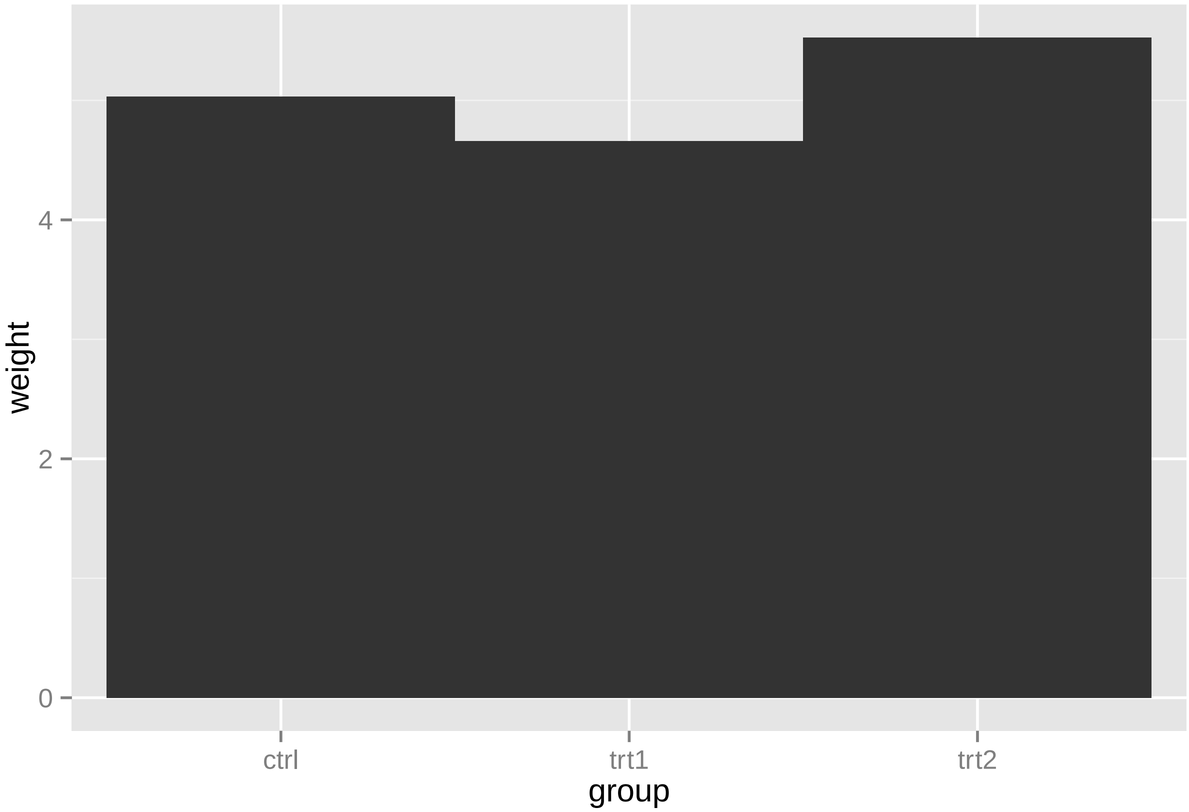
```
## default
ggplot( pg_mean, aes( x = group, y = weight)) + geom_bar( stat ="identity")
```



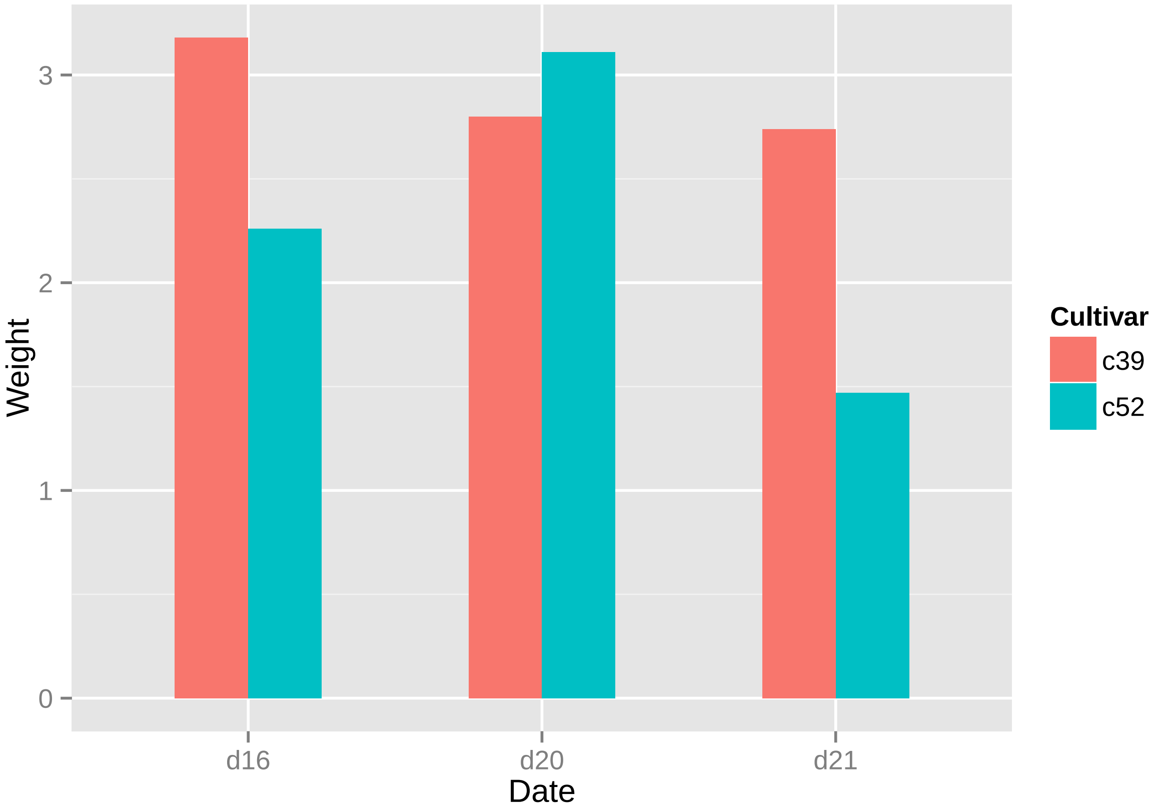
```
## for narrower bars
ggplot( pg_mean, aes( x = group, y = weight)) + geom_bar( stat ="identity", width = 0.5)
```



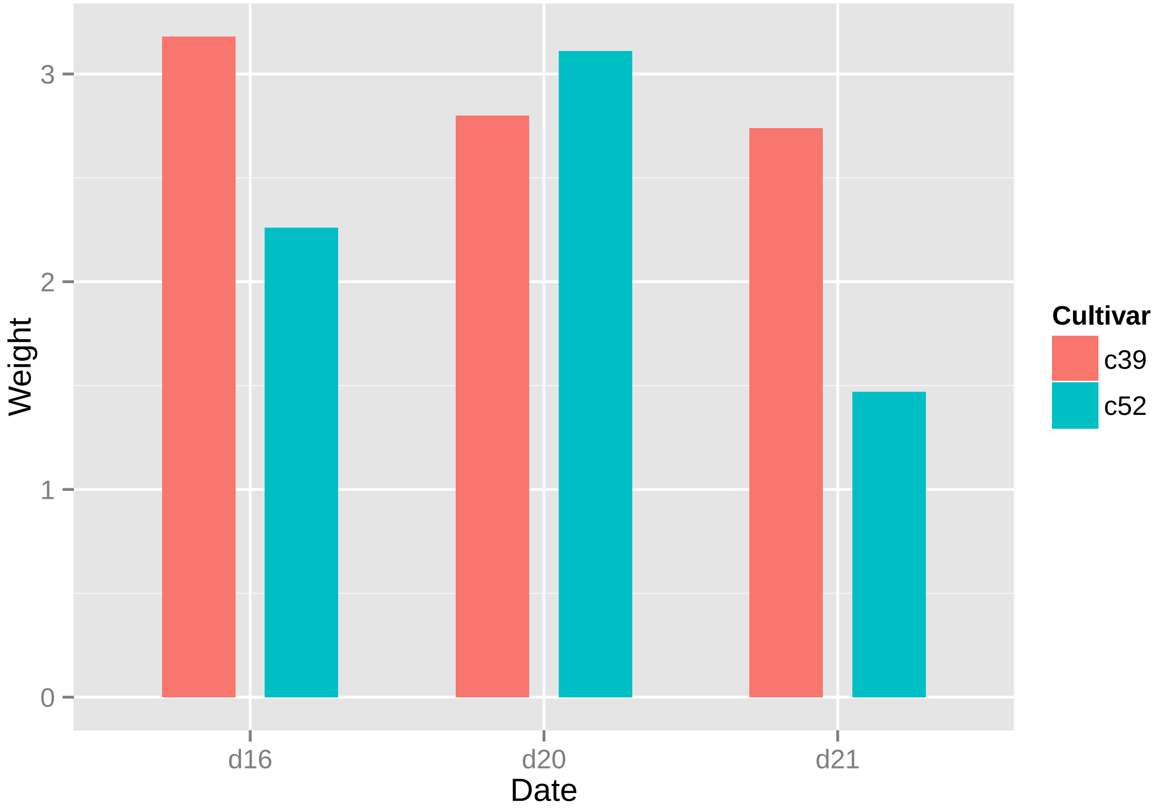
```
## for wider bars
ggplot( pg_mean, aes( x = group, y = weight)) + geom_bar( stat ="identity", width = 1)
```



```
## To add space between bars within a group, make width smaller and set the value for position_dodge
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat ="identity", width = 0.5, position ="dodge")
```

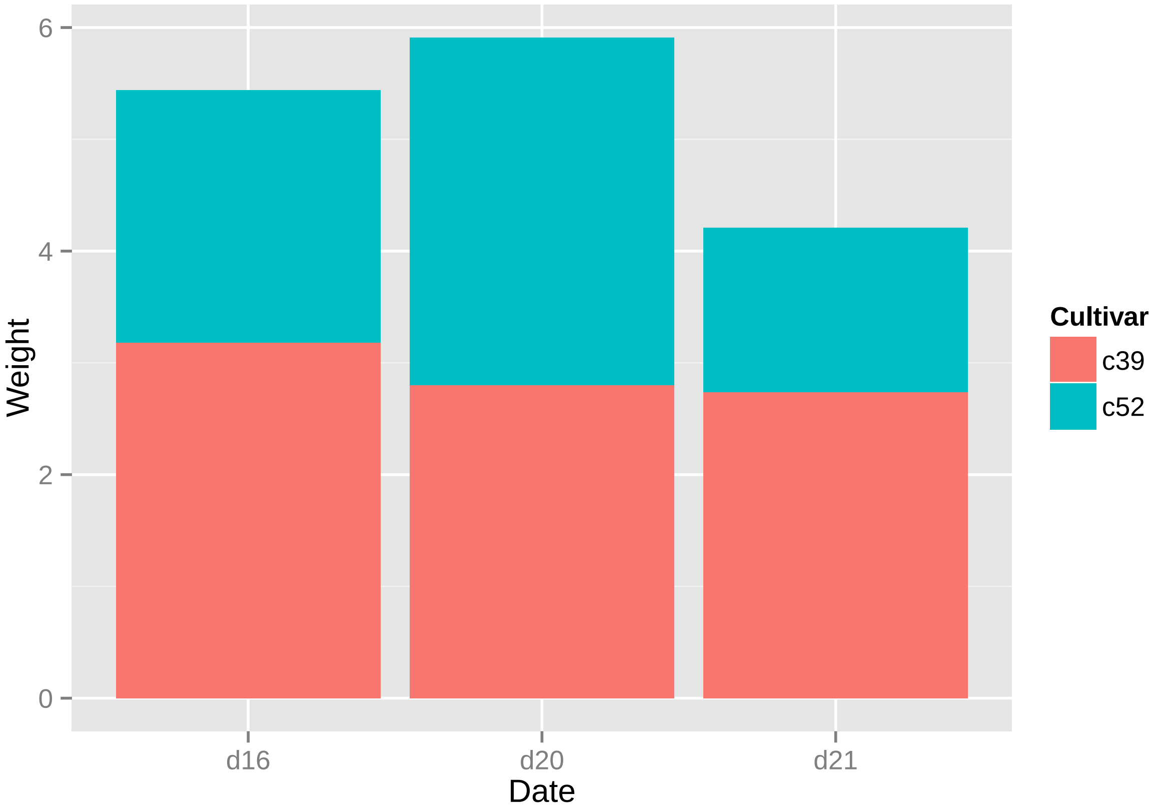


```
## And with some space between the bars:
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat ="identity", width = 0.5, position = position_dodge( 0.7))
```

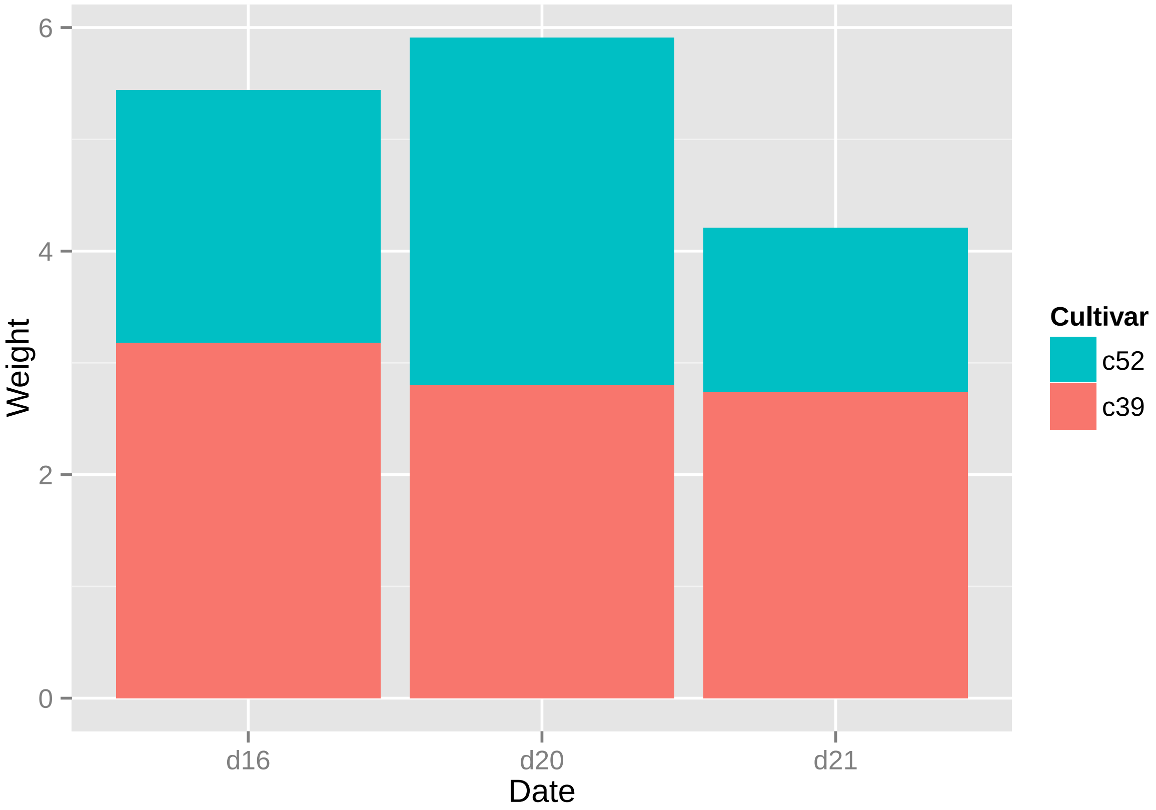


7. Making a Stacked Bar Graph

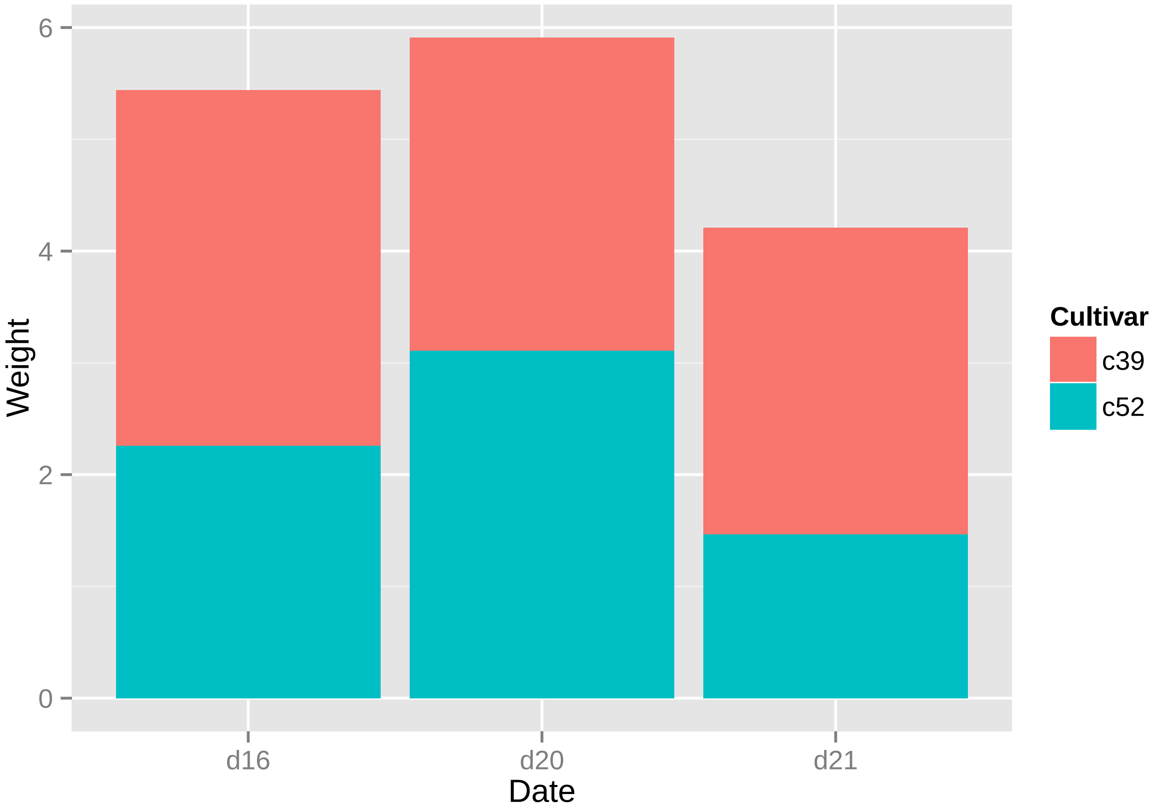
```
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat ="identity")
```



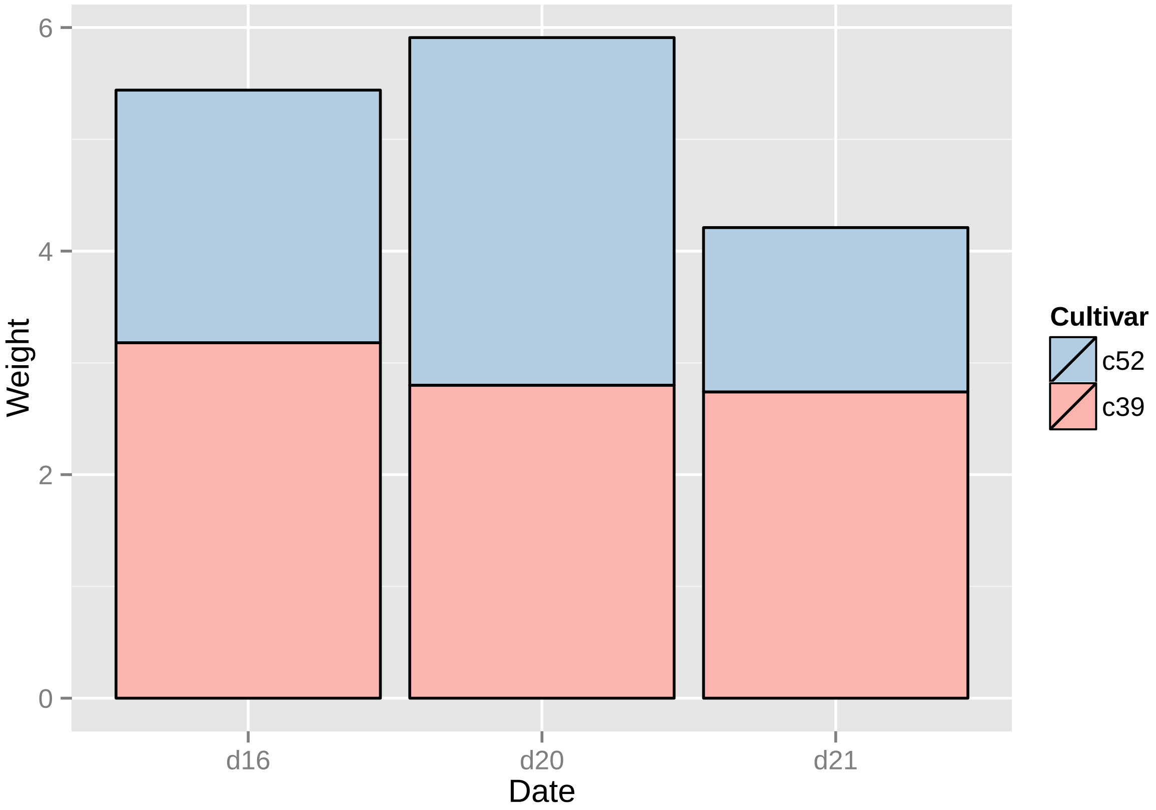
```
## reverse the order of items in the legend by using guides()
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat ="identity") +
  guides( fill = guide_legend( reverse = TRUE))
```



```
## reverse the stacking order
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar, order = desc( Cultivar))) +
  geom_bar( stat ="identity")
```

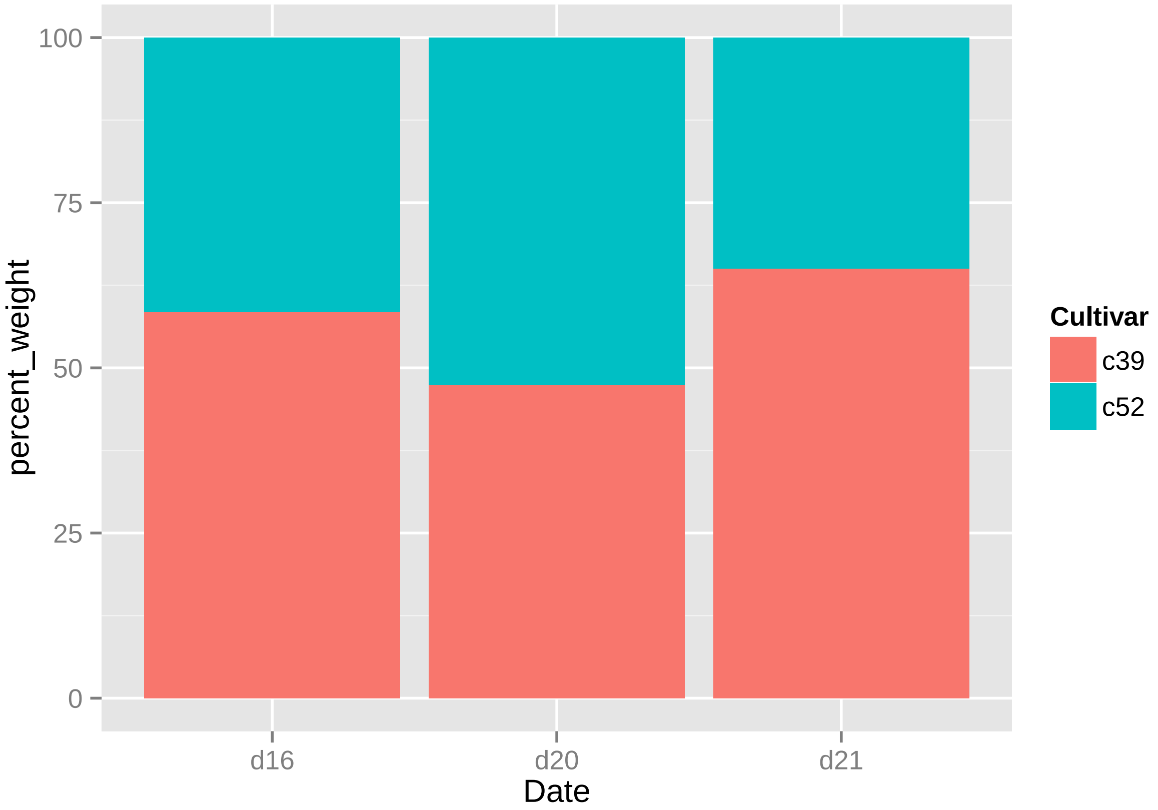


```
## scale_fill_brewer
ggplot( cabbage_exp, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat = "identity", colour = "black") +
  guides( fill = guide_legend( reverse = TRUE)) +
  scale_fill_brewer( palette = "Pastel1")
```

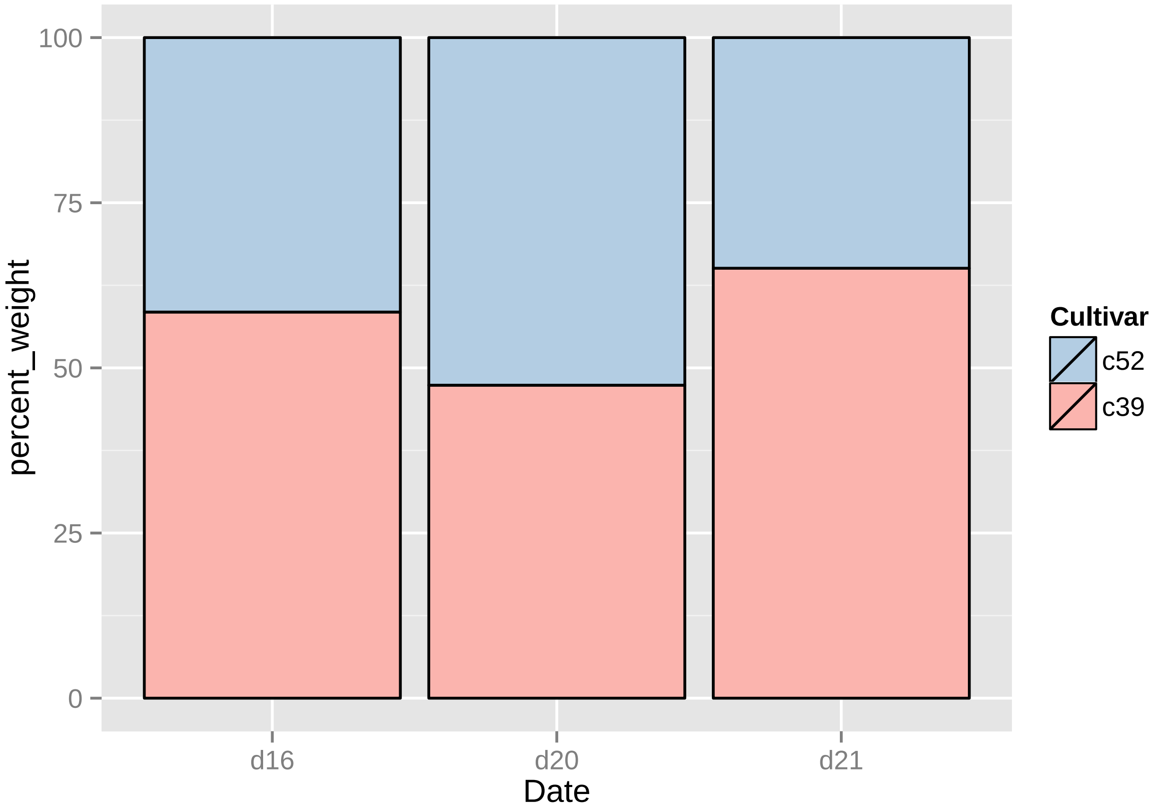


8. Making a Proportional Stacked Bar Graph

```
ce <- ddply( cabbage_exp, "Date", transform, percent_weight = Weight / sum( Weight) * 100)

ggplot( ce, aes( x = Date, y = percent_weight, fill = Cultivar)) +
  geom_bar( stat ="identity")
```

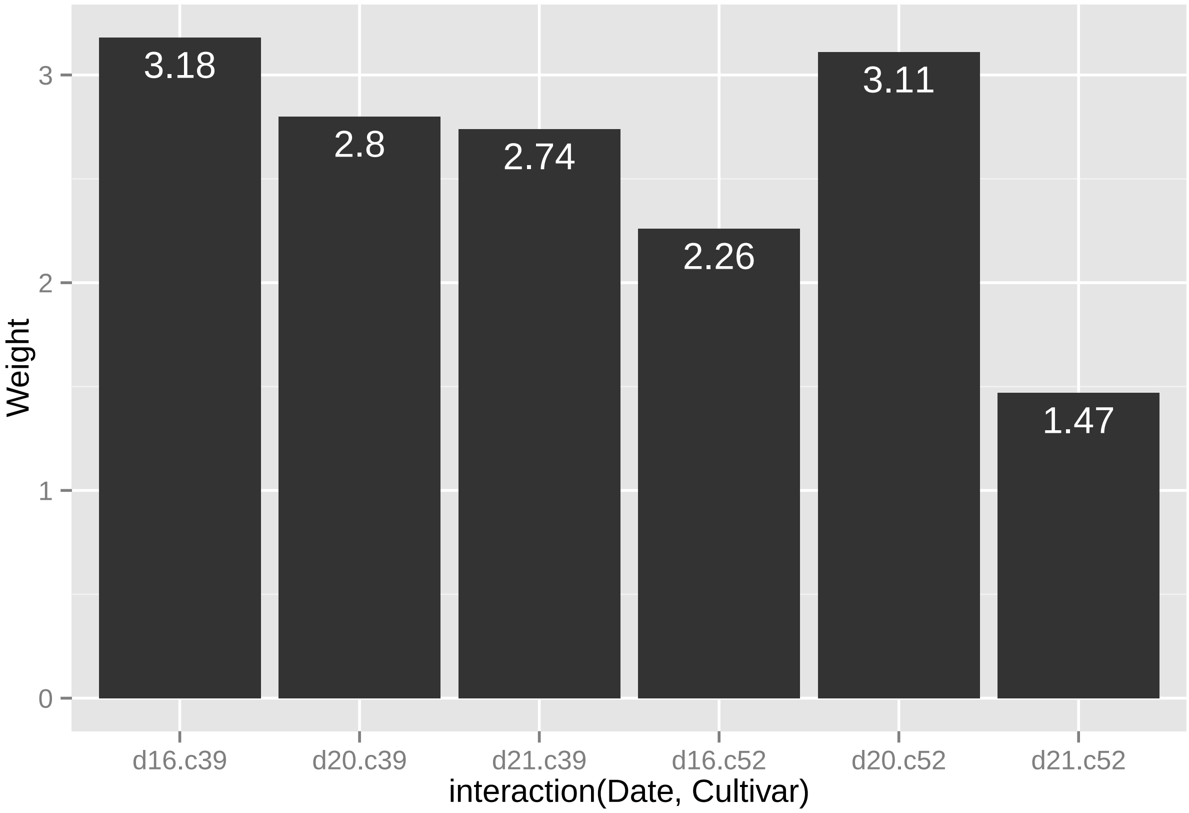


```
ce <- ddply( cabbage_exp, "Date", transform, percent_weight = Weight / sum( Weight) * 100)

ggplot( ce, aes( x = Date, y = percent_weight, fill = Cultivar)) +
  geom_bar( stat ="identity", colour ="black") +
  guides( fill = guide_legend( reverse = TRUE)) +
  scale_fill_brewer( palette ="Pastel1")
```

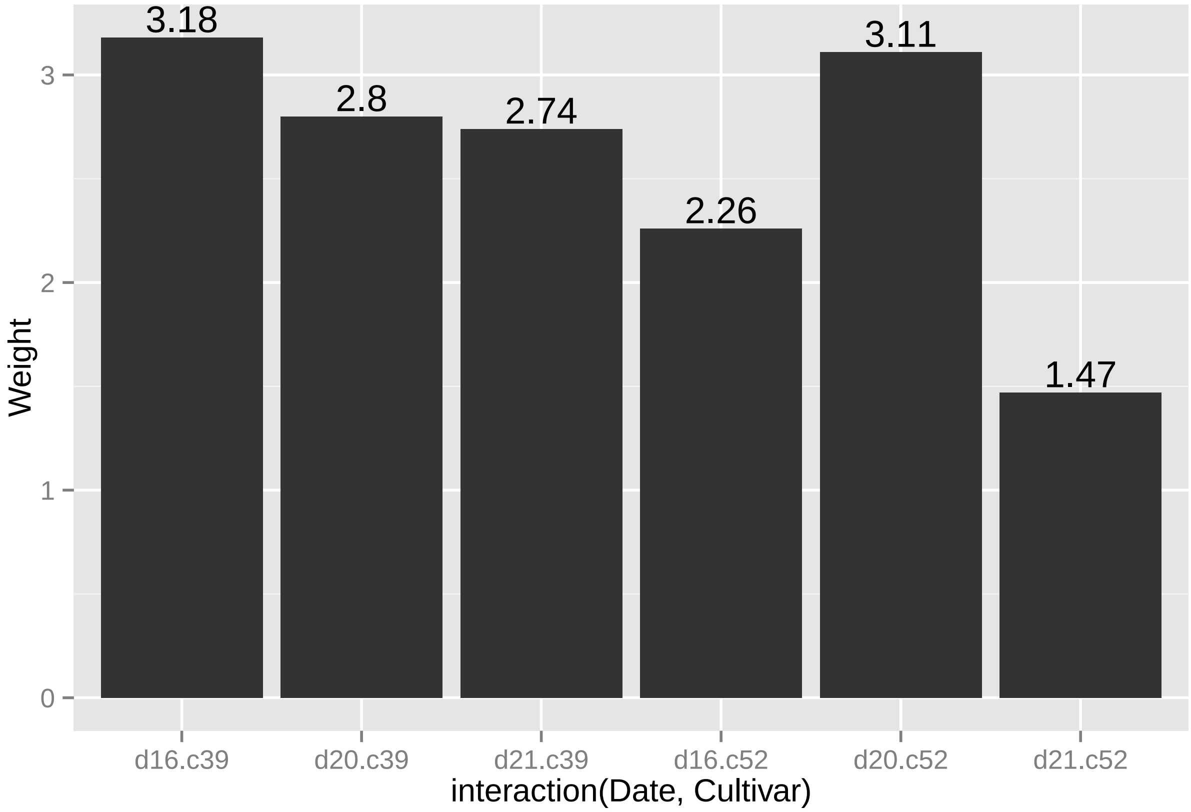


9. MAdding Labels to a Bar Graph

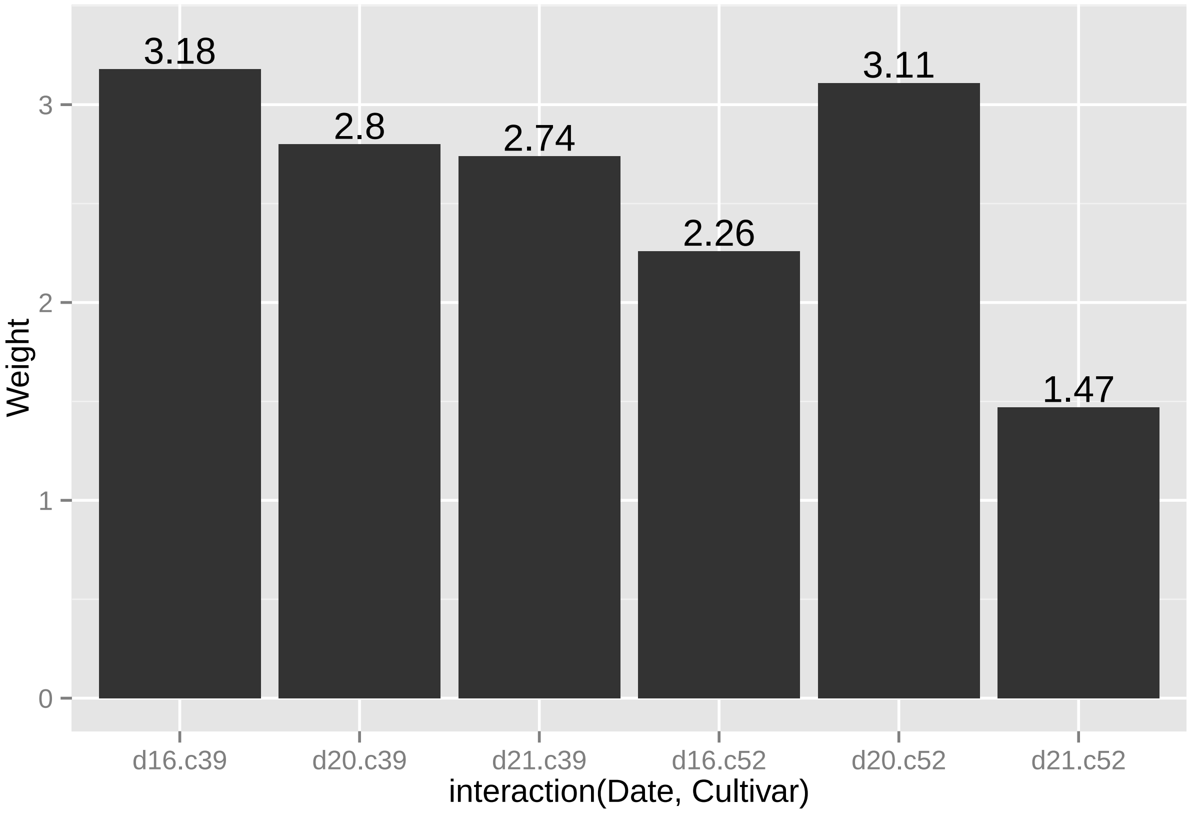
```
# Below the top
ggplot( cabbage_exp, aes( x = interaction( Date, Cultivar), y = Weight)) +
  geom_bar( stat ="identity") +
  geom_text( aes( label = Weight), vjust = 1.5, colour ="white")
```



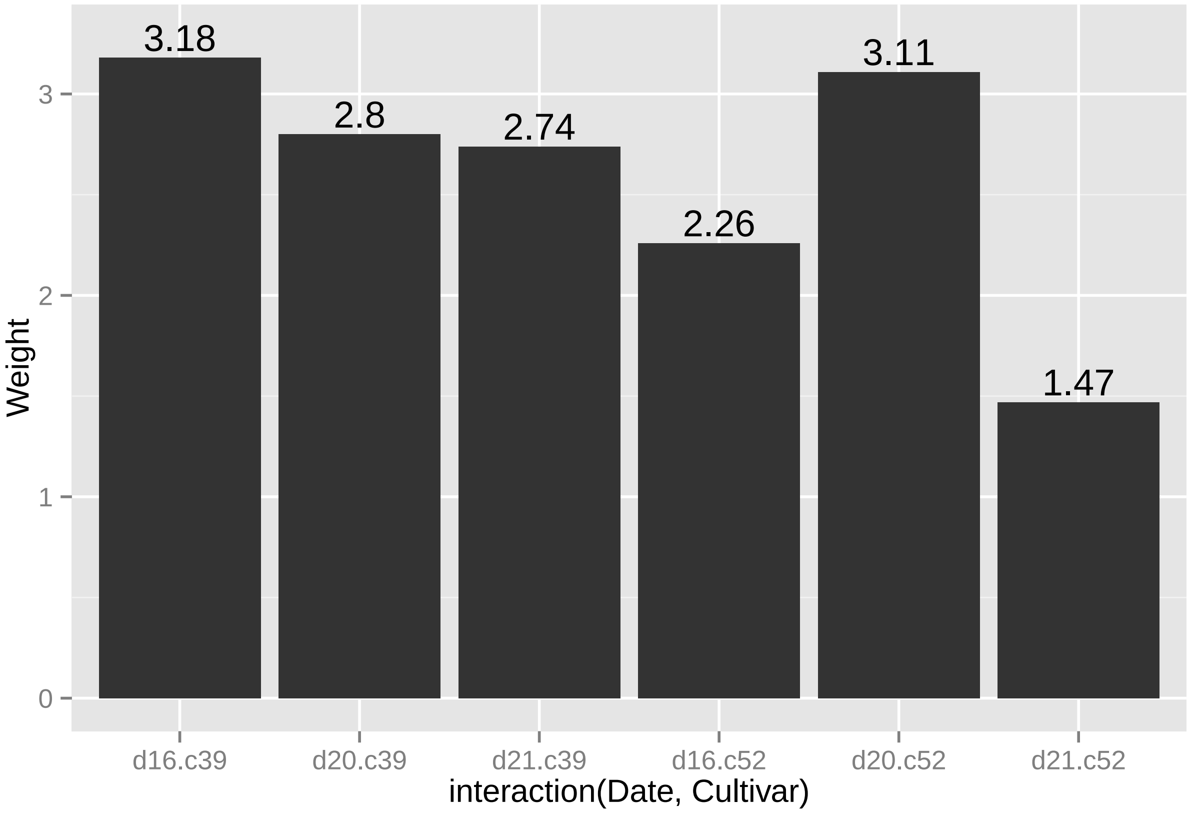
```
# Above the top
ggplot( cabbage_exp, aes( x = interaction( Date, Cultivar), y = Weight)) +
  geom_bar( stat ="identity") +
  geom_text( aes( label = Weight), vjust =-0.2)
```



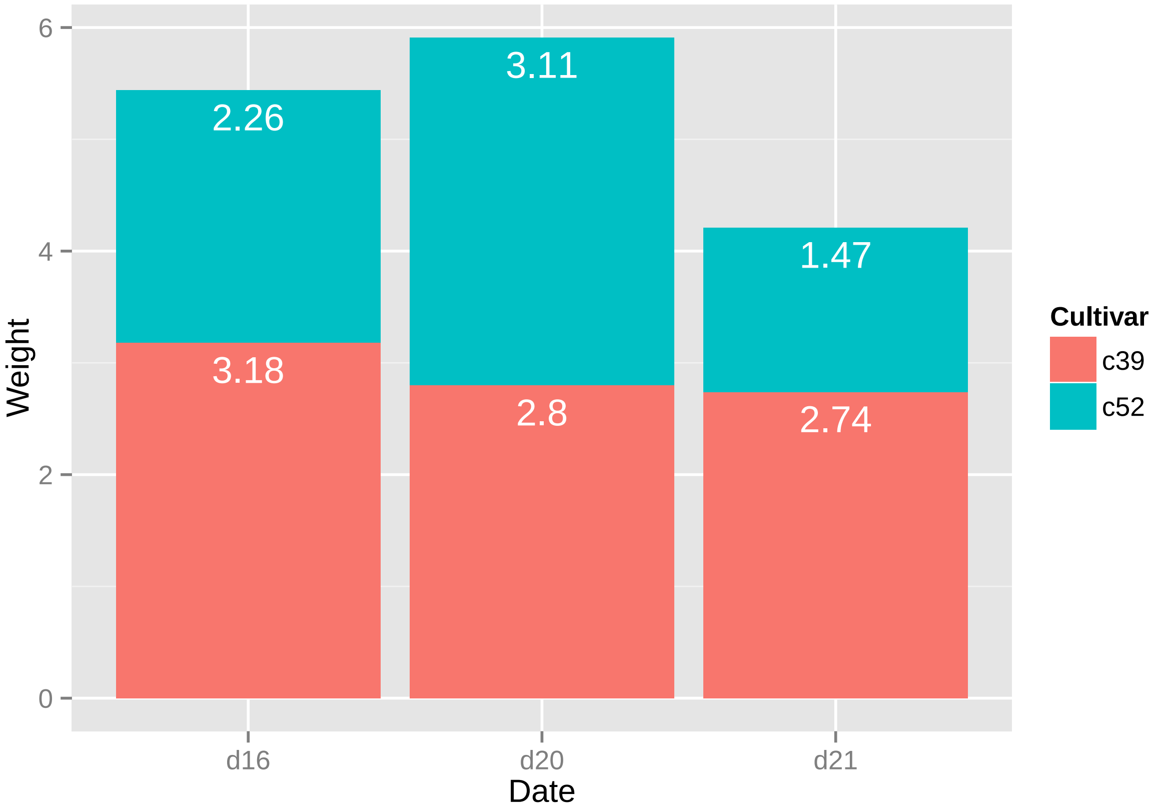
```
# Adjust y limits to be a little higher
ggplot( cabbage_exp, aes( x = interaction( Date, Cultivar), y = Weight)) +
  geom_bar( stat ="identity") + geom_text( aes( label = Weight), vjust =-0.2) +
  ylim( 0, max( cabbage_exp$Weight) * 1.05)
```



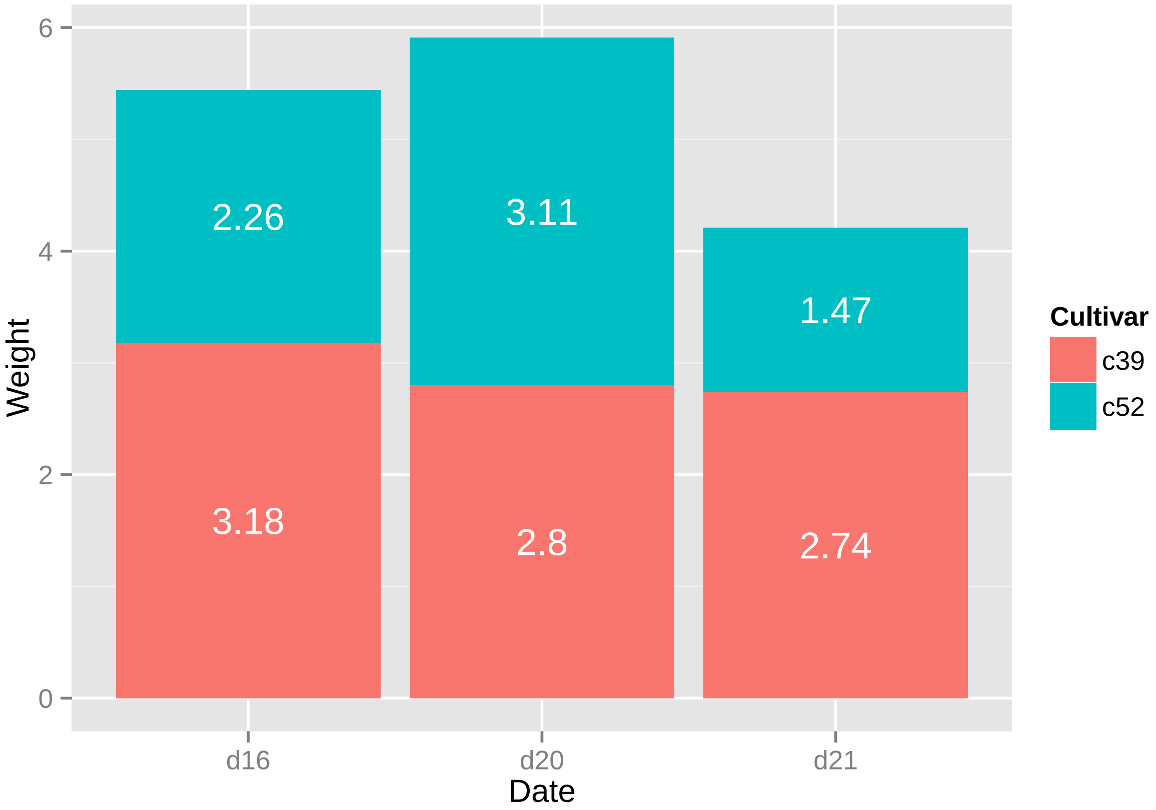
```
# Map y positions slightly above bar top - y range of plot will auto-adjust
ggplot( cabbage_exp, aes( x = interaction( Date, Cultivar), y = Weight)) +
  geom_bar( stat ="identity") + geom_text( aes( y = Weight + 0.1, label = Weight))
```



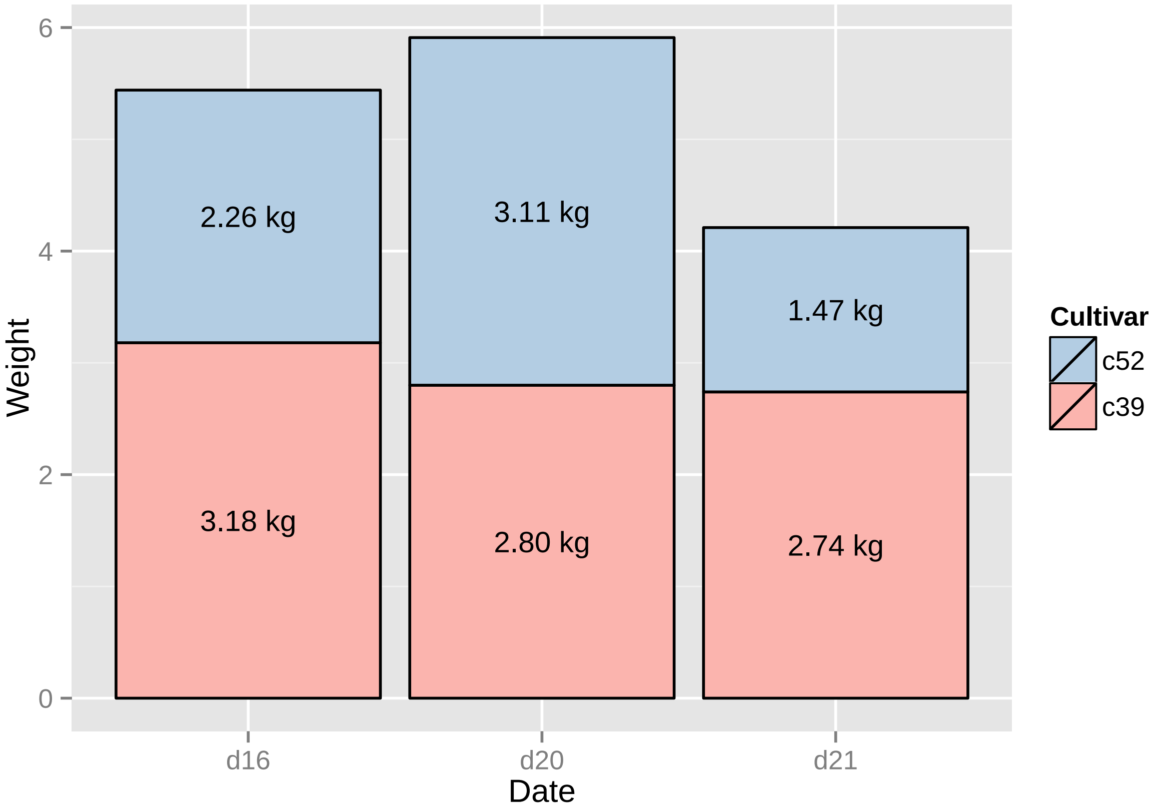
```
# Sort by the day and sex columns
ce <- arrange( cabbage_exp, Date, Cultivar)

## Get the cumulative sum
ce <- ddply( ce, "Date", transform, label_y = cumsum( Weight))

ggplot( ce, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat ="identity") +
  geom_text( aes( y = label_y, label = Weight), vjust = 1.5, colour ="white")
```



```
# Calculate y position, placing it in the middle
ce <- ddply( ce, "Date", transform, label_y = cumsum( Weight)-0.5* Weight)
ggplot( ce, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat ="identity") +
  geom_text( aes( y = label_y, label = Weight), colour ="white")
```

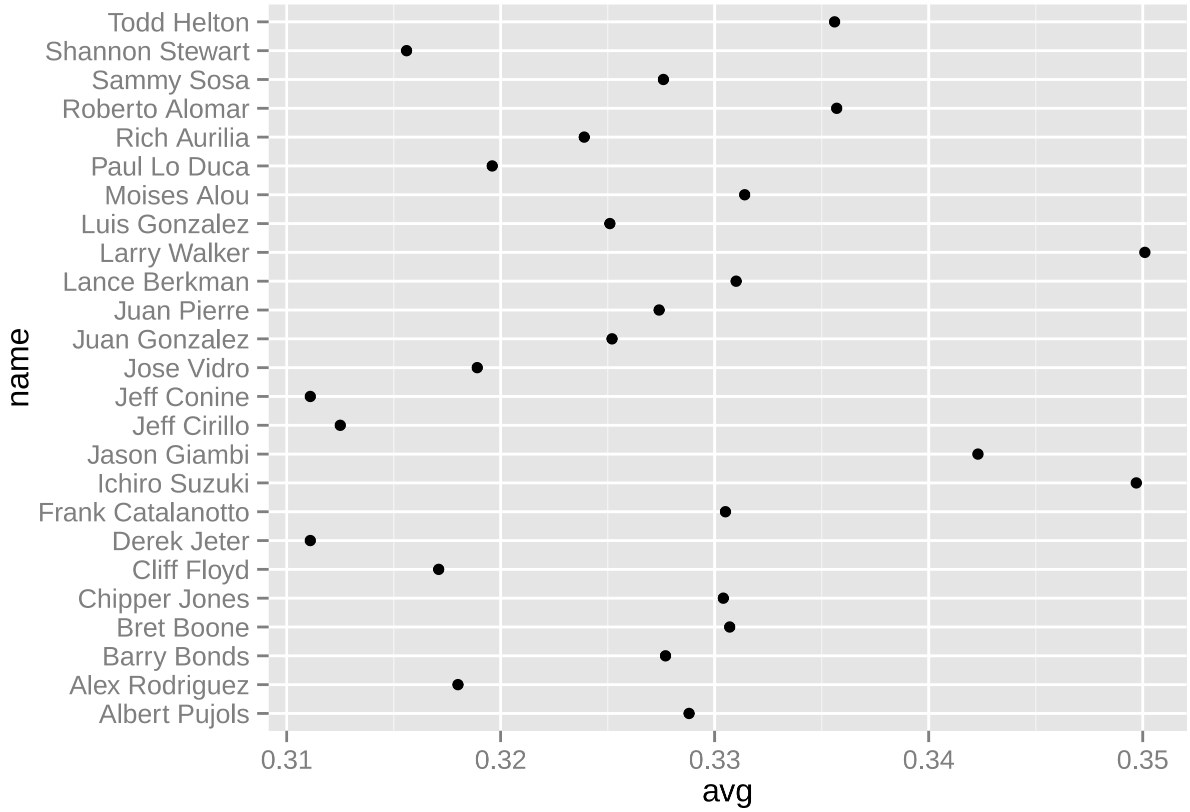


```
## add labels in the middle with a smaller font using size, add a "kg"
ggplot( ce, aes( x = Date, y = Weight, fill = Cultivar)) +
  geom_bar( stat ="identity", colour ="black") +
  geom_text( aes( y = label_y, label = paste( format( Weight, nsmall = 2), "kg")), size = 4) +
  guides( fill = guide_legend( reverse = TRUE)) + scale_fill_brewer( palette ="Pastel1")
```

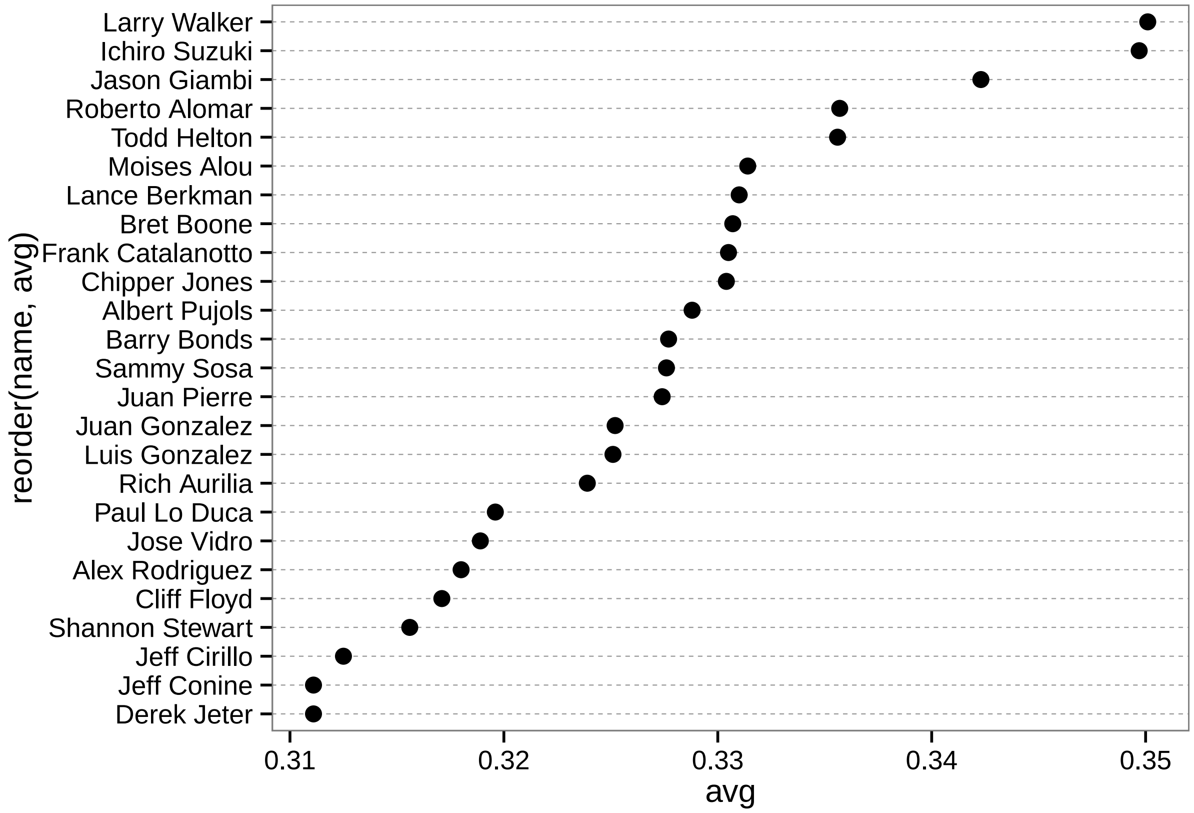


Making a Cleveland Dot Plot

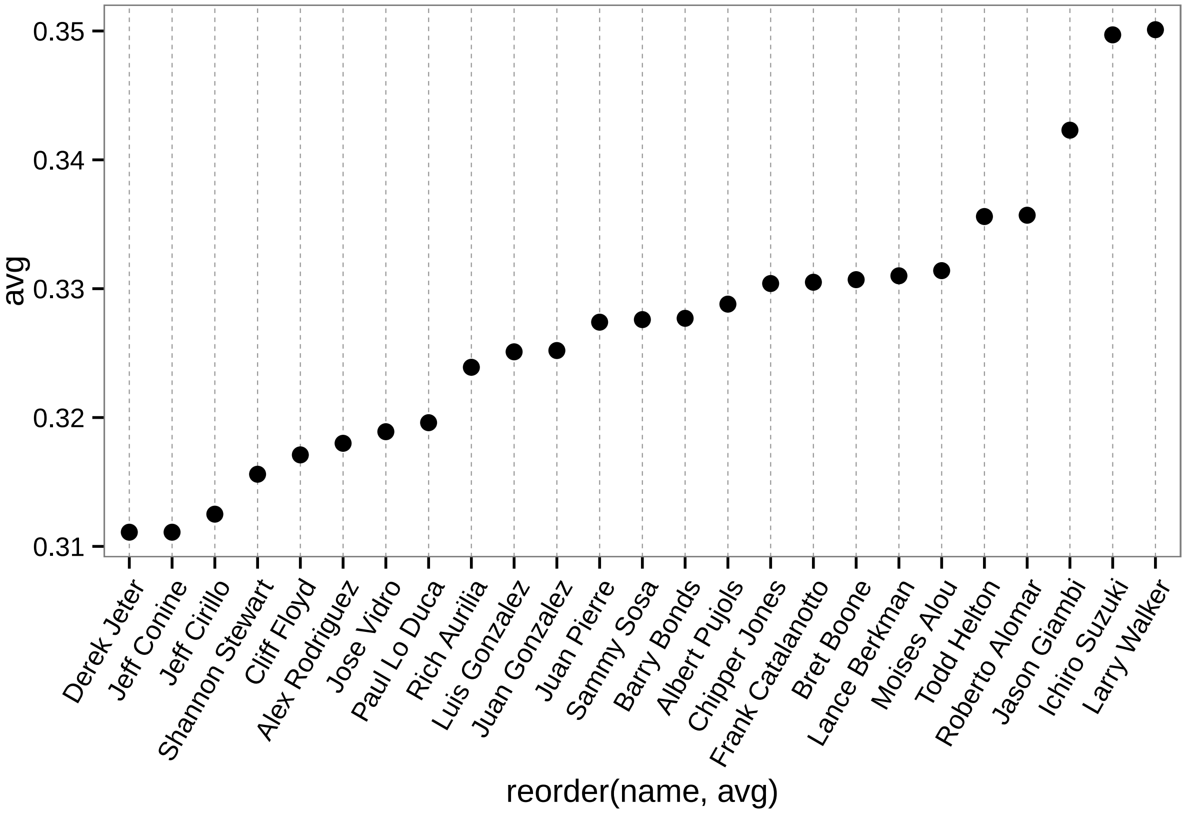
```
# Take the top 25 from the tophitters data set
tophit <- tophitters2001[ 1: 25, ]
ggplot( tophit, aes( x = avg, y = name)) + geom_point()
```



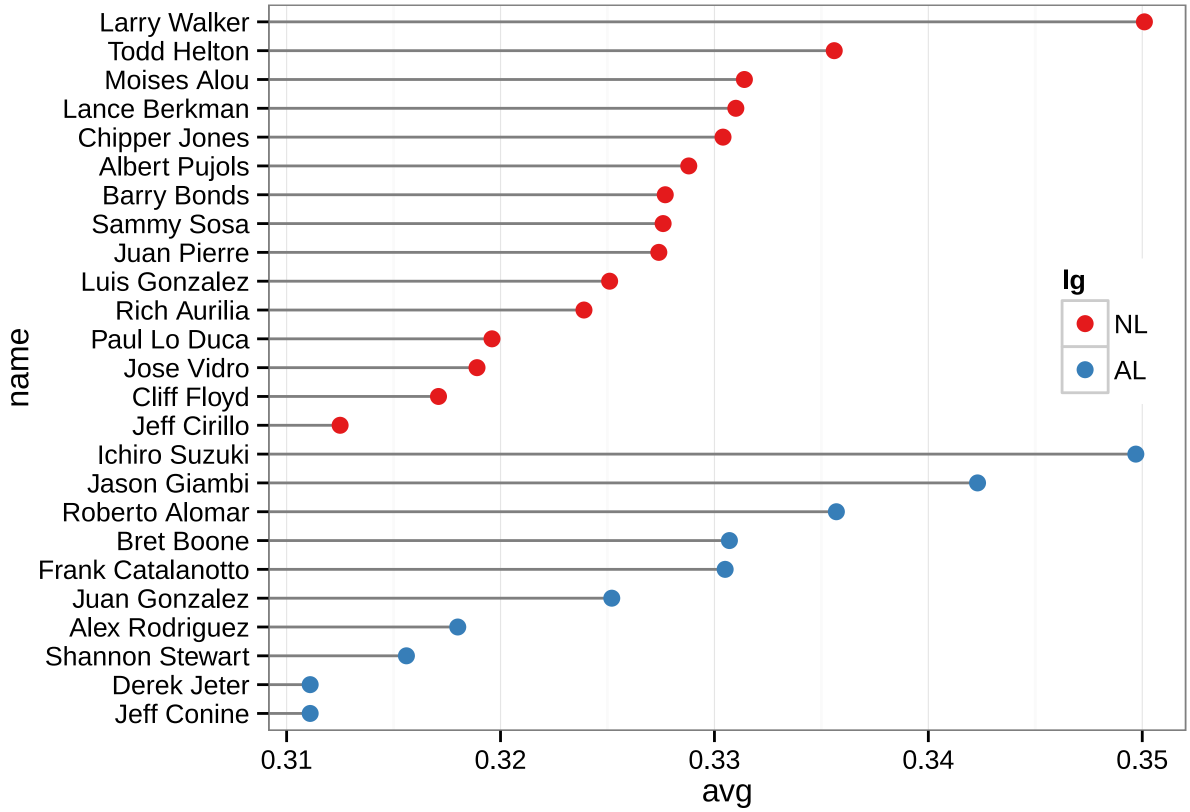
```
## reorder( name, avg),
ggplot( tophit, aes( x = avg, y = reorder( name, avg))) +
  geom_point( size = 3) +
  theme_bw() +
  theme( panel.grid.major.x = element_blank(),
         panel.grid.minor.x = element_blank(),
         panel.grid.major.y = element_line( colour ="grey60", linetype ="dashed"))
```



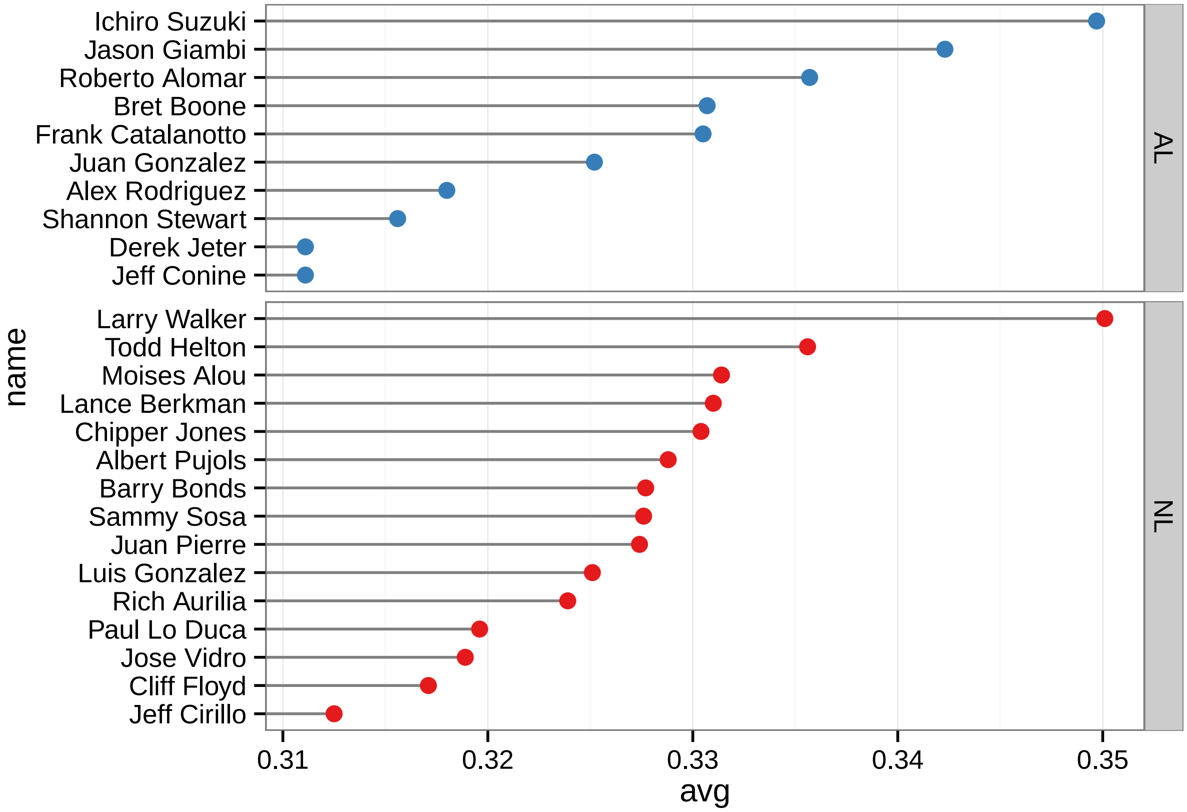
```
## swap the axes
ggplot( tophit, aes( x = reorder( name, avg), y = avg)) +
  geom_point( size = 3) +
  theme_bw() +
  theme( axis.text.x = element_text( angle = 60, hjust = 1),
         panel.grid.major.y = element_blank(),
         panel.grid.minor.y = element_blank(),
         panel.grid.major.x = element_line( colour ="grey60", linetype ="dashed"))
```



```
# Get the names, sorted first by lg, then by avg
nameorder <- tophit$name[ order( tophit$lg, tophit$avg)]

# Turn name into a factor, with levels in the order of nameorder
tophit$name <- factor( tophit$name, levels = nameorder)

ggplot( tophit, aes( x = avg, y = name)) +
  geom_segment( aes( yend = name), xend = 0, colour ="grey50") +
  geom_point( size = 3, aes( colour = lg)) + scale_colour_brewer( palette ="Set1", limits = c("NL","AL"
  theme_bw() +
  theme( panel.grid.major.y = element_blank(), # No horizontal grid lines
         legend.position = c( 1, 0.55), # Put legend inside plot area
         legend.justification = c( 1, 0.5))
```



```
## Another way to separate the two groups is to use facets,
ggplot( tophit, aes( x = avg, y = name)) +
  geom_segment( aes( yend = name), xend = 0, colour ="grey50") +
  geom_point( size = 3, aes( colour = lg)) +
  scale_colour_brewer( palette ="Set1", limits = c("NL","AL"), guide = FALSE) +
  theme_bw() +
  theme( panel.grid.major.y = element_blank()) +
  facet_grid( lg ~ ., scales ="free_y", space ="free_y")
```


Ichiro Suzuki
Jason Giambi
Roberto Alomar
Bret Boone
Frank Catalanotto
Juan Gonzalez
Alex Rodriguez
Shannon Stewart
Derek Jeter
Jeff Conine
AL
Larry Walker
Todd Helton
Moises Alou
Lance Berkman
Chipper Jones
Albert Pujols
Barry Bonds
Sammy Sosa
Juan Pierre
Luis Gonzalez
Rich Aurilia
Paul Lo Duca
Jose Vidro
Cliff Floyd
Jeff Cirillo
NL
name
0.31
0.32
0.33
0.34
0.35
avg