About the chart - Bars with error bars: add uncertainty/variability (e.g., standard deviation) to bars using geom\_errorbar().

# installation   
#install.packages("daltoolbox")  
  
# loading DAL  
library(daltoolbox)

Graphics environment setup.

library(ggplot2)  
library(RColorBrewer)  
  
# color palette  
colors <- brewer.pal(4, 'Set1')  
  
# setting the font size for all charts  
font <- theme(text = element\_text(size=16))

Aggregated data: mean and standard deviation by species.

# iris dataset for the example  
head(iris)

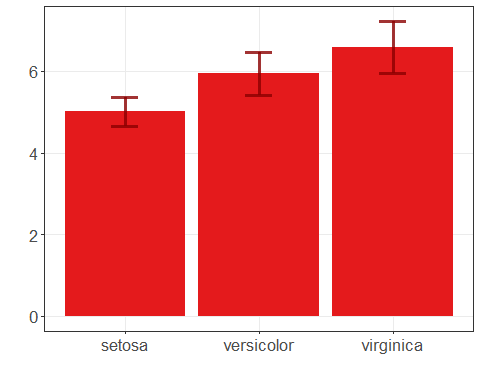
## Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 1 5.1 3.5 1.4 0.2 setosa  
## 2 4.9 3.0 1.4 0.2 setosa  
## 3 4.7 3.2 1.3 0.2 setosa  
## 4 4.6 3.1 1.5 0.2 setosa  
## 5 5.0 3.6 1.4 0.2 setosa  
## 6 5.4 3.9 1.7 0.4 setosa

library(dplyr)  
data <- iris |> group\_by(Species) |> summarize(mean=mean(Sepal.Length), sd=sd(Sepal.Length))  
head(data)

## # A tibble: 3 × 3  
## Species mean sd  
## <fct> <dbl> <dbl>  
## 1 setosa 5.01 0.352  
## 2 versicolor 5.94 0.516  
## 3 virginica 6.59 0.636

Build bars and add geom\_errorbar.

# Bar graph with error bars  
# When bar graphs present an average behavior, it is possible to plot a dispersion around it using an error bar.  
# The error bar is added using $geom\\_errorbar()$ function to a previously defined bar graph.   
  
grf <- plot\_bar(data, colors=colors[1], alpha=1) + font  
grf <- grf + geom\_errorbar(aes(x=Species, ymin=mean-sd, ymax=mean+sd),   
 width=0.2, colour="darkred", alpha=0.8, size=1.1)   
plot(grf)



References - Wickham, H. (2016). ggplot2: Elegant Graphics for Data Analysis. Springer. (geom\_errorbar)