



# Shiny Milano: a dashboard to explore the Milano municipality budget

# ggplot + Shiny Base Code

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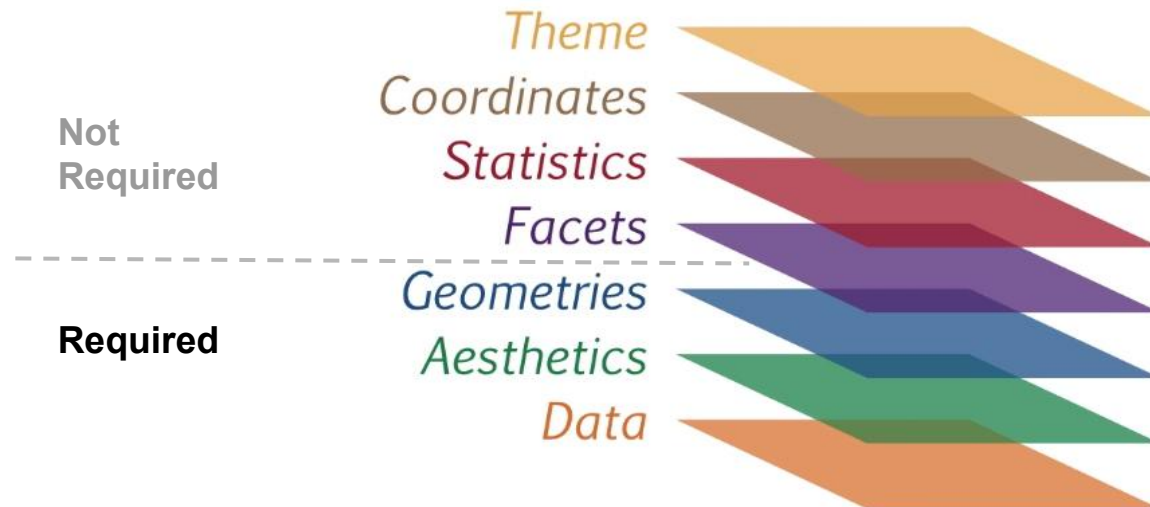
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# ggplot2 package

ggplot2 is a plotting system for R based on the grammar of graphics, that makes it easy to produce complex multi-layered graphics



# Shiny App Structure

```
# global -----  
# This code is run once  
  
  library(shiny)  
  ....  
  
# ui -----  
# Draw graphical user interface of the app  
  ui <- fluidPage(  
    ....  
  )  
  
# server -----  
# Logic behind the graphical interface  
  server <- function(input, output, session){  
    ....  
  }  
  shinyApp(ui = ui, server = server)
```

## app.R :

1. global:  
initialization
2. ui:  
User Interface
3. server  
Server logic

[Single file shiny app](#)

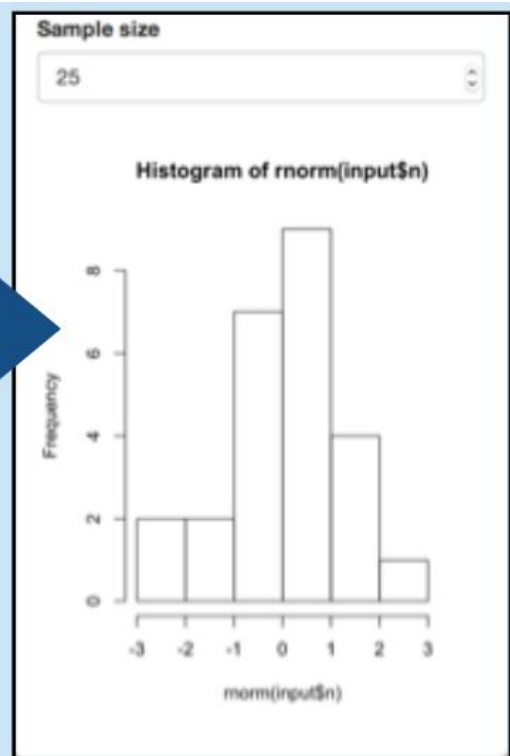
# Shiny App Example

```
library(shiny)

ui <- fluidPage(
  numericInput(inputId = "n",
    "Sample size", value = 25),
  plotOutput(outputId = "hist")
)

server <- function(input, output) {
  output$hist <- renderPlot({
    hist(rnorm(input$n))
  })
}

shinyApp(ui = ui, server = server)
```



[Cheat sheet](#)

```
library(shiny)
ui <-
  fluidPage(
    numericInput(
      inputId = "num",
      label = "Sample size",
      value = 25),
    plotOutput(
      outputId = "hist"
    )
  )
server <-
  function(input, output) {
    output$hist <- renderPlot({
      hist(rnorm(
        input$num
      ))
    })
  }
shinyApp(ui = ui, server = server)
```

# Input Output cycle

```
library(shiny)
ui <-
  fluidPage(
    numericInput(
      inputId = "num",
      label = "Sample size",
      value = 25),
    plotOutput(
      outputId = "hist"
    )
  )
server <-
  function(input, output) {
    output$hist <- renderPlot({
      hist(rnorm(
        input$num
      ))
    })
  }
shinyApp(ui = ui, server = server)
```

## Run:

1. **ui**: the user select a value for "Sample size"
2. **server**: `input$num` is modified
3. **server**: `hist(rnorm(...))` is run again to update `output$hist`
4. **ui**: the `hist` is showed in the web interface

[Single file shiny app](#)

# Function substitution

```
library(shiny)

plot_fun <- function(number) {
  hist(rnorm(
    number
  ))
}

ui <-
  fluidPage(
    # ...
  )

server <-
  function(input, output) {
    output$hist <- renderPlot({
      plot_fun( input$num )
    })
  }
shinyApp(ui = ui, server = server)
```

[Single file shiny app](#)

## Run:

1. **ui**: the user select a value for "Sample size"
2. **server**: `input$num` is modified
3. **server**: `hist(rnorm(...))` is run again to update `output$hist`
4. **ui**: the `hist` is showed in the web interface



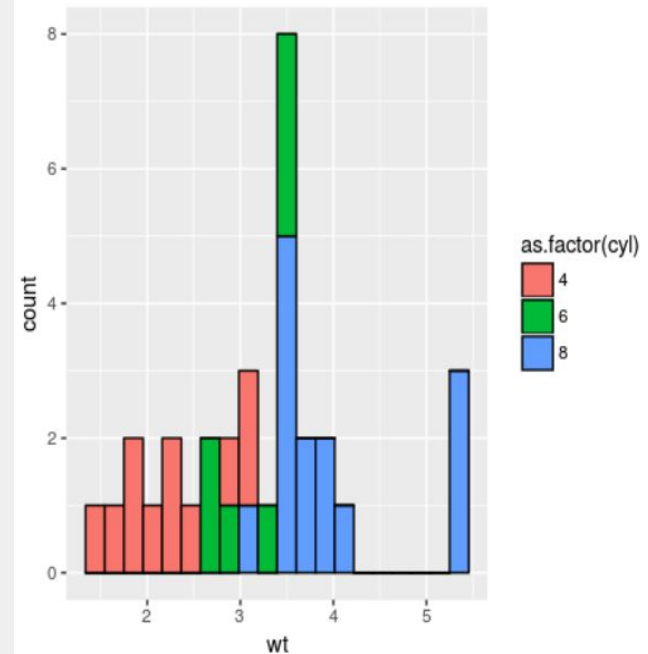
# ggplot NSE

```
> ggplot( mtcars ) +
+ aes( x = wt, fill = as.factor(cyl) ) +
+ geom_histogram( bins = 20, color = "black" )
> wt
```

Error: object 'wt' not found

```
> mtcars$wt
```

```
[1] 2.620 2.875 2.320 3.215 3.440 3.460 3.570
3.190 3.150 3.440 3.440 4.070 3.730 3.780 5.250
[16] 5.424 5.345 2.200 1.615 1.835 2.465 3.520
3.435 3.840 3.845 1.935 2.140 1.513 3.170 2.770
[31] 3.570 2.780
```

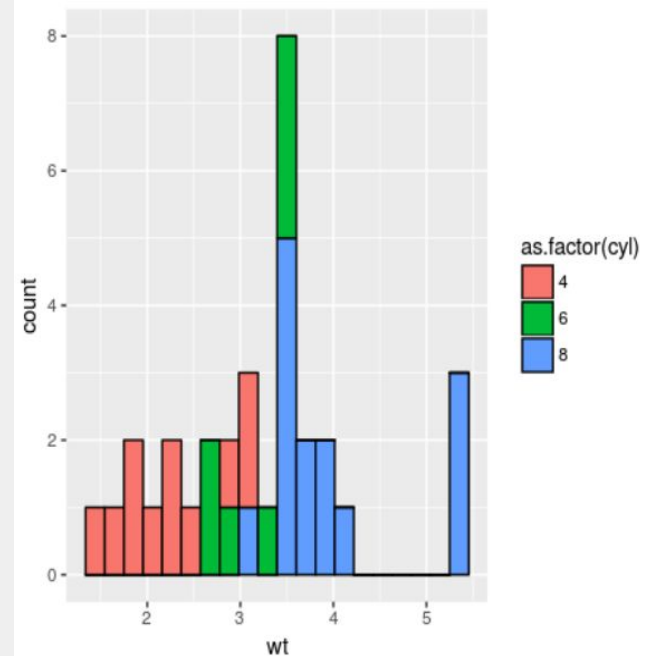


# ggplot SE

```

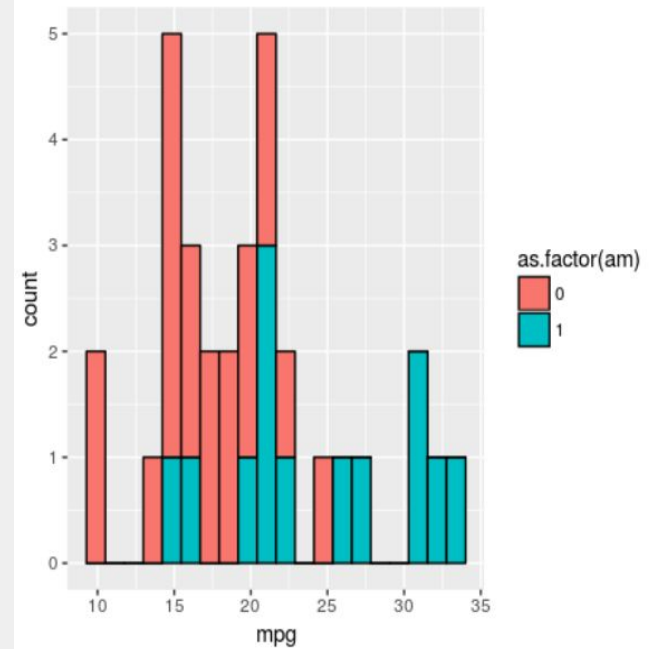
> aes_x <- "wt"
> aes_fill <- "as.factor(cyl)"
>
> ggplot( mtcars ) +
+   aes_string( x = aes_x, fill = aes_fill ) +
+   geom_histogram( bins = 20, color = "black" )
> aes_x
[1] "wt"

```



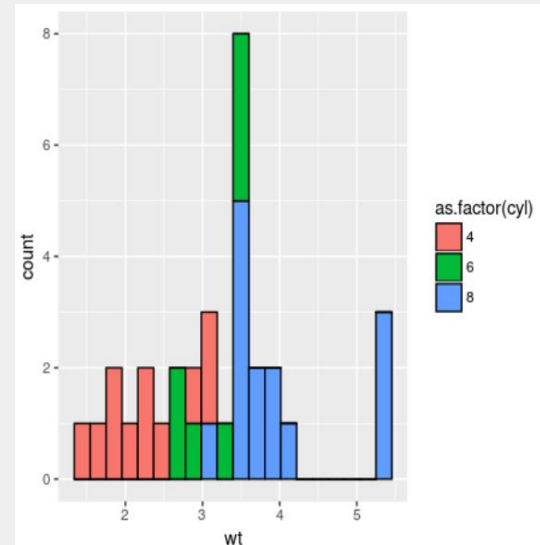
# ggplot SE is re-usable

```
> aes_x <- "mpg"
> aes_fill <- "as.factor(am)"
> ggplot( mtcars ) +
+   aes_string( x = aes_x, fill = aes_fill ) +
+   geom_histogram( bins = 20, color = "black" )
> aes_x
[1] "mpg"
```



# ggplot in a function

```
> pl_fun <- function(data, aes_x, aes_fill) {  
+   pl <-  
+   ggplot( mtcars ) +  
+   aes_string( x = aes_x, fill = paste("as.factor(", aes_fill, ")") ) +  
+   geom_histogram( bins = 20, color = "black" )  
+   return(pl)  
+ }  
> pl_fun(mtcars, "wt", "cyl")
```



# RHtmlwidgets

<http://gallery.htmlwidgets.org/>



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