Visualisasi

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Dalam modul visualisasi ini, Anda akan menggunakan data evals dan paket ggplot2. Aktifkanlah paket untuk mengimpor data dan paket ggplot2!

library(tidyverse) #tidyverse bisa untuk semua package plot

## Warning: package 'tidyverse' was built under R version 3.5.3

## -- Attaching packages ---------------------------------------------------------------------------- tidyverse 1.2.1 --

## v ggplot2 3.1.1 v purrr 0.3.2  
## v tibble 2.1.1 v dplyr 0.8.1  
## v tidyr 0.8.3 v stringr 1.4.0  
## v readr 1.3.1 v forcats 0.4.0

## Warning: package 'ggplot2' was built under R version 3.5.3

## Warning: package 'tibble' was built under R version 3.5.3

## Warning: package 'tidyr' was built under R version 3.5.3

## Warning: package 'readr' was built under R version 3.5.3

## Warning: package 'purrr' was built under R version 3.5.3

## Warning: package 'dplyr' was built under R version 3.5.3

## Warning: package 'stringr' was built under R version 3.5.3

## Warning: package 'forcats' was built under R version 3.5.3

## -- Conflicts ------------------------------------------------------------------------------- tidyverse\_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

library(readr)  
library(ggplot2)

Sekarang impor dataset evals melalui pranala “<https://www.openintro.org/stat/data/evals.csv>”. Simpan obyek data tersebut dengan nama evals. (Petunjuk: ?read\_csv)

evals <- read.csv("https://www.openintro.org/stat/data/evals.csv") #antara readcsv dan setelahnya jgn spasi  
evals

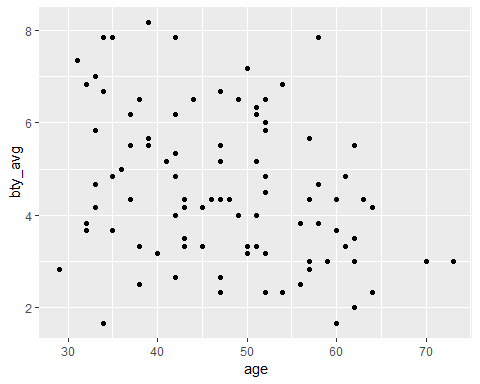
## score rank ethnicity gender language age cls\_perc\_eval  
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## 403 3.8 tenured not minority male english 57 87.50000  
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## 410 4.7 teaching not minority female english 47 88.23529  
## 411 4.6 teaching not minority female english 47 100.00000  
## 412 4.6 teaching not minority female english 47 94.11765  
## 413 4.0 teaching not minority female english 47 88.23529  
## 414 4.2 tenured minority female english 54 100.00000  
## 415 4.9 tenured minority female english 54 93.75000  
## 416 4.5 tenured minority female english 54 80.76923  
## 417 4.8 tenured minority female english 54 77.77778  
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## 421 5.0 teaching not minority male english 58 85.71429  
## 422 4.9 teaching not minority male english 58 85.00000  
## 423 4.6 teaching not minority male english 58 95.00000  
## 424 5.0 teaching not minority male english 58 84.61539  
## 425 4.8 teaching not minority male english 58 87.50000  
## 426 4.9 teaching not minority male english 58 94.11765  
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## 439 3.3 tenure track minority female english 35 62.50000  
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## 446 4.8 tenured not minority female english 52 100.00000  
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Anda dapat membuat grafik melalui ggplot2 dengan menggunakan kode dengan struktur berikut:

ggplot(data, aes(x, y)) +  
 geom\_X(evals)

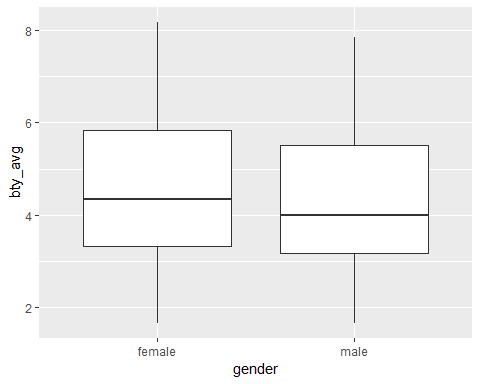
Anda dapat mengganti X dengan geom yang sesuai. Misalnya geom\_point() untuk menggambar titik, geom\_line untuk menggambar garis, geom\_text untuk memasukan teks dalam gambar. Perhatikan contoh berikut untuk membuat scatterplot antara bty\_avg terhadap age.

ggplot(data = evals, aes(x = age, y = bty\_avg)) +  
 geom\_point()



Sekarang dapatkah Anda membuat grafik dengan gender pada sumbu x dan bty\_avg pada sumbu y? Serta gantilah geom\_point() menjadi geom\_boxplot. Grafik dan informasi apakah yang Anda dapatkan?

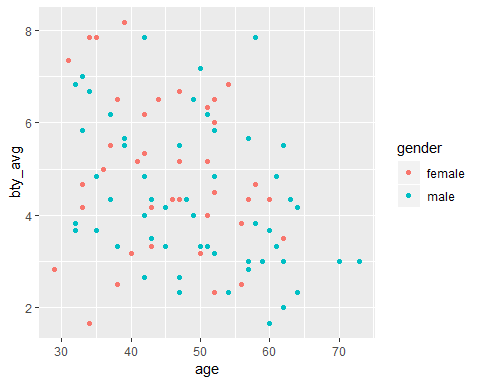
ggplot(data = evals, aes(x = gender, y = bty\_avg)) +  
 geom\_boxplot()



geom

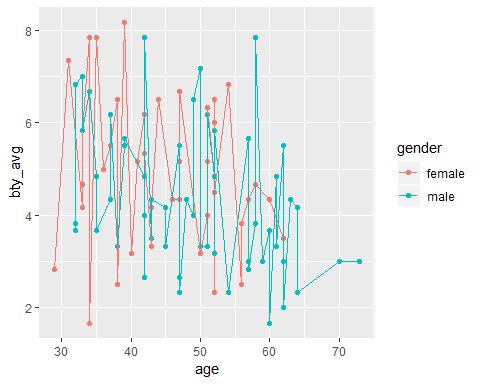
Anda dapat menambahkan informasi mengenai variabel lain kedalam plot dengan menempatkannya pada bagian aes() dengan menggunakan aesthetic yang sesuai. Apa yang akan terjadi saat anda menambahkan informasi ‘colour = gender’ pada baris kode berikut?

ggplot(data = evals, aes(x = age, y = bty\_avg, colour = gender)) +  
 geom\_point()



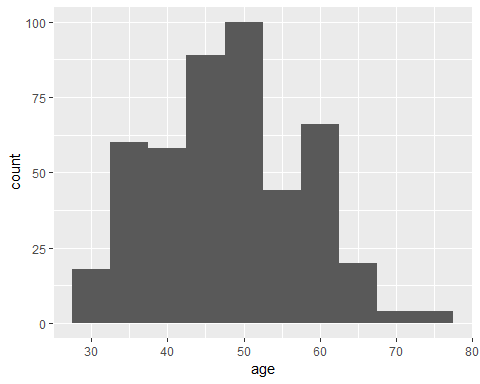
Selain menambahkan aesthetic, Anda juga dapat menambahkan geometry dengan cara menggunakan tanda +. Apa yang akan terjadi jika Anda menambahkan geom\_line pada baris kode berikut? Menurut Anda data apakah yang cocok digunakan untuk jenis grafik tersebut?

ggplot(data = evals, aes(x = age, y = bty\_avg, colour = gender)) +  
 geom\_point() +  
 geom\_line()



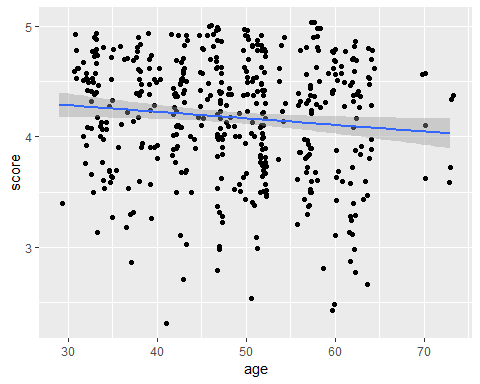
Pada contoh-contoh di atas, Anda menggunakan nilai x dan y sebagai aesthetic. Bagaimana jika Anda hanya menggunakan x saja? Jenis geometry apakah yang cocok digunakan jika hanya menggunakan satu nilai x tersebut? (Petunjuk: distribusi data)

ggplot(data = evals, aes(x = age)) +  
 geom\_histogram(binwidth = 5)



Anda juga dapat membuat grafik yang berisi prediksi model dengan menggunakan geom\_smooth. Buatlah grafik tersebut dengan menggunakan geom\_point() dan geom\_smooth()! Sumbu x adalah ‘age’ dan sumbu y adalag ‘score’. (Pada contoh ini kita akan menggunakan metode regresi linear untuk model, sehingga argumen pada geom\_smooth() diisi dengan ‘method = “lm”’).

ggplot(data = evals, aes(x = age, y = score)) +  
 geom\_jitter() + #geom jitter digunakan untuk data menumpuk agar lebih bergeser (overplotting) #geom point biasanya menumpuk  
 geom\_smooth(method = "lm")



Bagaimana jika Anda menambahkan argumen ‘colour = ethnicity’ ke dalam aes()? Apakah yang terjadi dan dapatkah Anda menjelaskannya? Anda dipersilahkan untuk mengganti label atau menambahkan judul pada grafik dengan menggunakan labs.

ggplot(data = evals, aes(x = age, y = score, colour = ethnicity)) +  
 geom\_jitter() +  
 scale\_colour\_manual(values = c("yellow", "red")) +  
 geom\_smooth(method = "lm") +  
 labs(  
 x = "age",  
 y = "score",  
 title = "grafik antara usia terhadap skor",  
 colour= "Etnik"  
 )

