8

```r
rm(list=ls()); gc();  gc(); #<1>
if (!require("pacman")) install.packages("pacman") #<2>
pacman::p_load(tidyverse, magrittr,estimatr,car,modelsummary,ggrepel,patchwork) #<3>
```

① r
② pacman
③

```r
ice4_1 <- read_csv("data/ice4_1.csv")
ice4_1
```

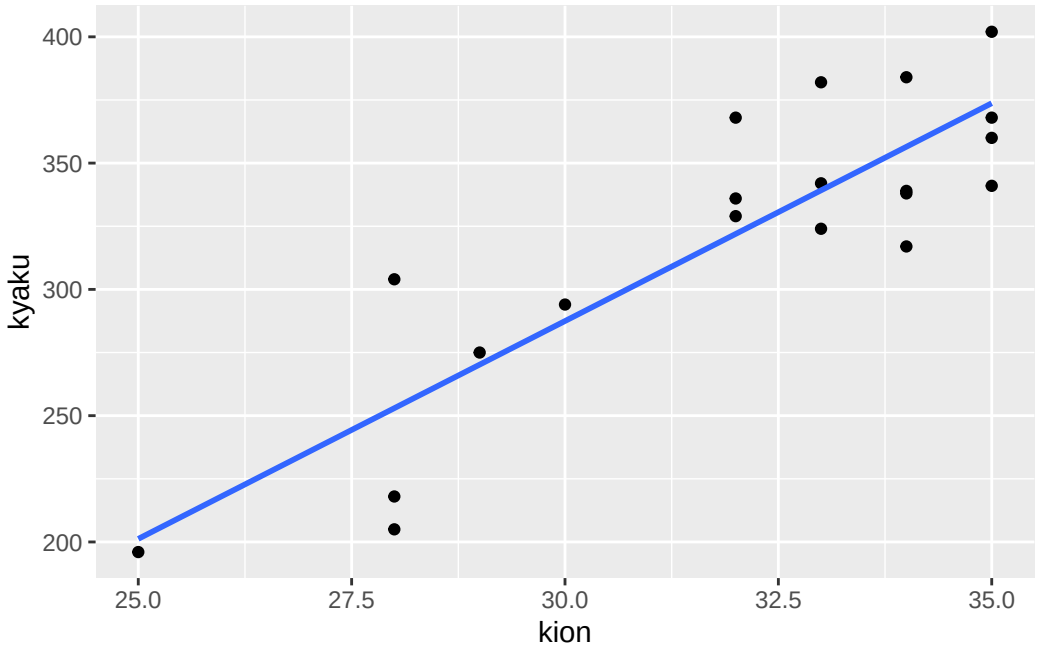
```
# A tibble: 20 x 3
     num  kion kyaku
   <dbl> <dbl> <dbl>
 1     1    33   382
 2     2    33   324
 3     3    34   338
 4     4    34   317
 5     5    35   341
 6     6    35   360
 7     7    34   339
 8     8    32   329
 9     9    28   218
10    10    35   402
11    11    33   342
12    12    28   205
13    13    32   368
14    14    25   196
15    15    28   304
16    16    30   294
17    17    29   275
18    18    32   336
19    19    34   384
20    20    35   368
```

kion kyaku

```
g <- ggplot(data = ice4_1, #<1>
            aes(x = kion, y = kyaku) #<2>
            ) %>%
  + geom_point() %>% #<3>
  + geom_smooth(method = "lm",se=FALSE) #<4>

plot(g)
```

①
② x y
③
④ (lm)

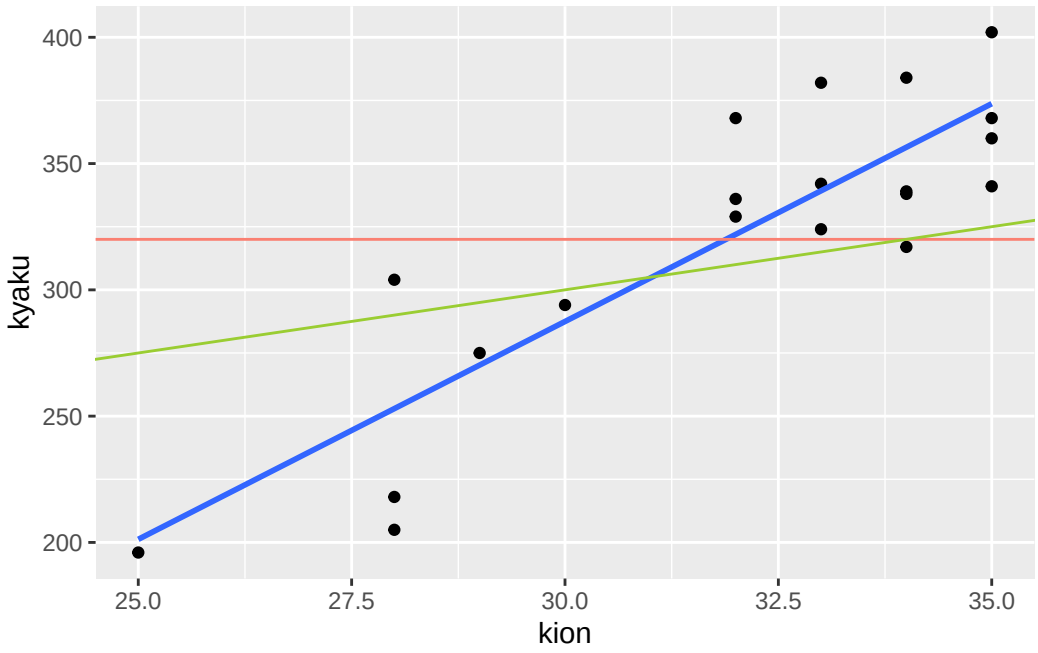



```
g <- ggplot(data = ice4_1, #
            aes(x = kion, y = kyaku) #x y
            ) %>%
  + geom_point() %>% #
  + geom_smooth(method = "lm",se=FALSE) %>%
  + geom_hline(aes(yintercept=320),
               color = "salmon") %>% #<1>
```

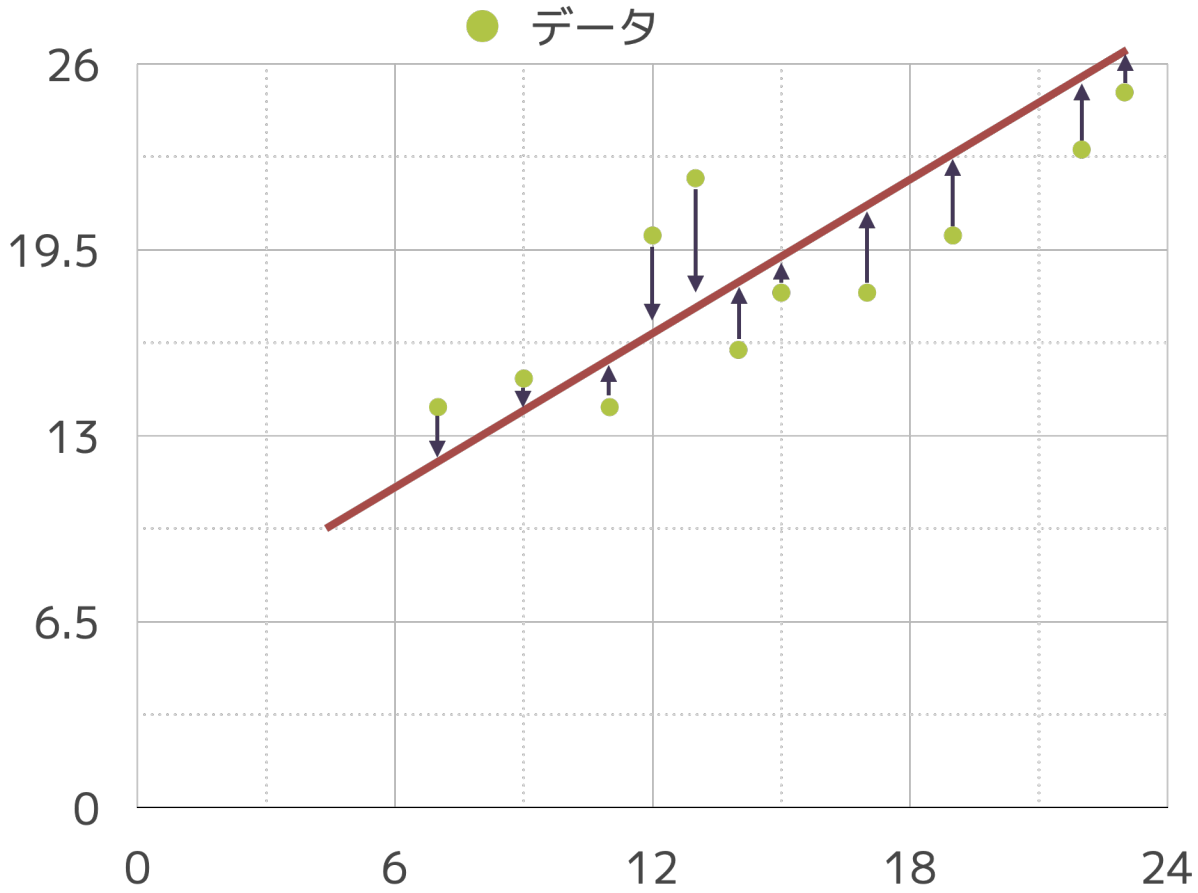
```
  + geom_abline(intercept = 150, slope = 5,
                color = "yellowgreen")#<2>

#              (lm)
plot(g)
```

① 320
② 5 150



$\pm$ $E(u) = 0$



x, y

•