Test1

$\beta_1 = \text{Season}$

$\beta_2 = \text{year}$

$\beta_3 = \text{month}$

$\beta_4 = \text{hour}$

$\beta_5 = \text{holiday}$

$\beta_6 = \text{weekday}$

$\beta_7 =$

```r
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.0 --
```

```
## v ggplot2 3.3.2      v purrr   0.3.4
## v tibble  3.0.4      v dplyr   1.0.2
## v tidyr   1.1.2      v stringr 1.4.0
## v readr   1.4.0      v forcats 0.5.0
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```r
dataset = read.csv("hour.csv")
```

```r
convert_hour_to_day <- function(hour){
  require(tidyverse)
  day = hour %>%
    group_by(dteday, season, yr, mnth, holiday, weekday, workingday) %>%
    summarize(weathersit = as.integer(round(mean(weathersit))),
              temp = mean(temp),
              atemp = mean(atemp),
              hum = mean(hum),
              windspeed = mean(windspeed),
              casual = sum(casual),
              registered = sum(registered),
              cnt = sum(cnt))
  day = tibble::rowid_to_column(day, "instant")
  return(day)
}
```

```r
quibble <- function(x, q = c(0.25, 0.5, 0.75)) {
  tibble(x = quantile(x, q), q = q)
}

plot_by_hour <- function(hour, variable, quantiles = c(0.10, 0.25, 0.5, 0.75, 0.90)){
  require(tidyverse)
  require(scales)
  data = hour %>%
    group_by(hr) %>%
    summarise(x = quibble(get(variable), quantiles))
  data = tibble(hr = as.character(data$hr), x = data$x$x, q = data$x$q)
  quant_title = paste(ordinal(quantiles*100), collapse = ", ")
  quant_title = paste0(quant_title, " percentile ", variable, " of each hour of day")
  plo = ggplot(data, aes(x = reorder(hr, sort(as.numeric(hr))), y = x)) +
    theme_bw() +
    geom_boxplot(aes(fill = reorder(hr, sort(as.numeric(hr))))) +
    xlab("Hour of Day") +
    ylab(variable) +
    theme(legend.position = "none") +
    ggtitle(quant_title)
  return(plo)
}

plot_by_hour(dataset, "cnt")
```

```
## Loading required package: scales
```

```
##
## Attaching package: 'scales'
```

```
## The following object is masked from 'package:purrr':
##
##     discard
```
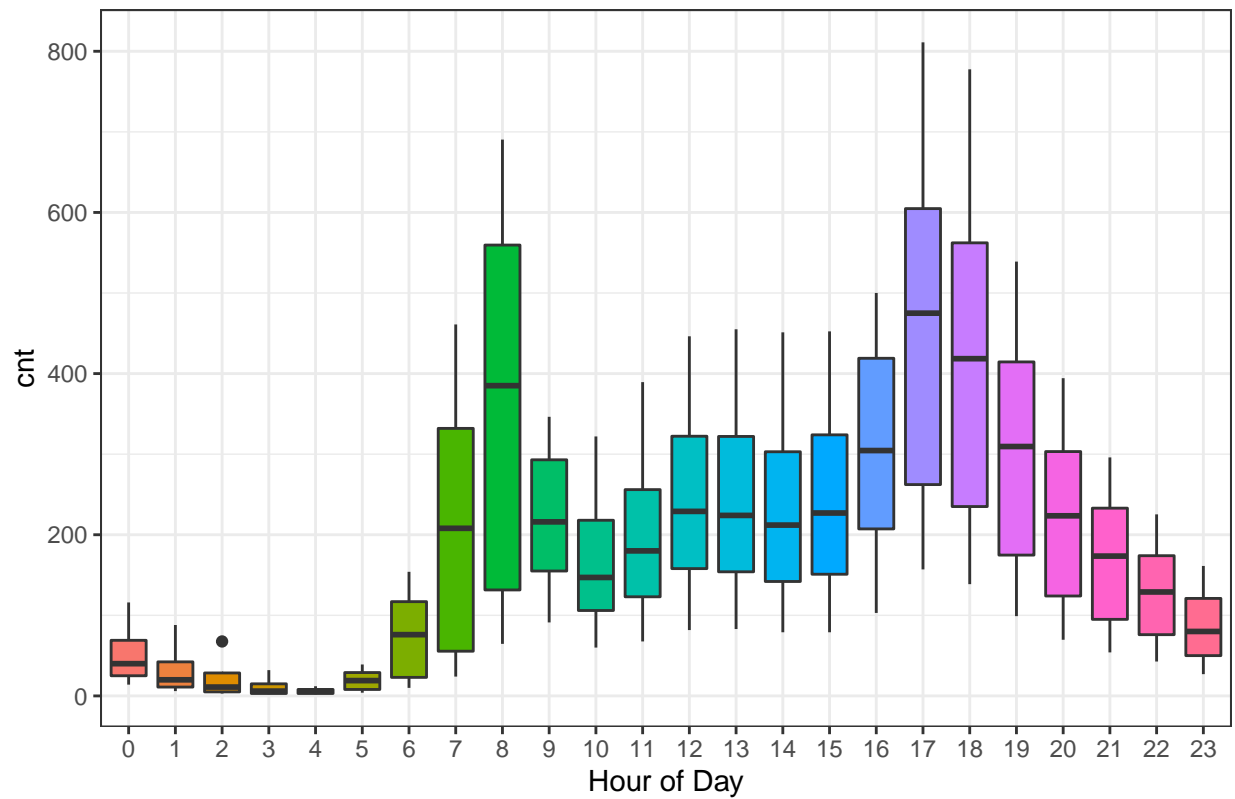
```
## The following object is masked from 'package:readr':
##
##     col_factor
```

```
## `summarise()` regrouping output by 'hr' (override with `.groups` argument)
```

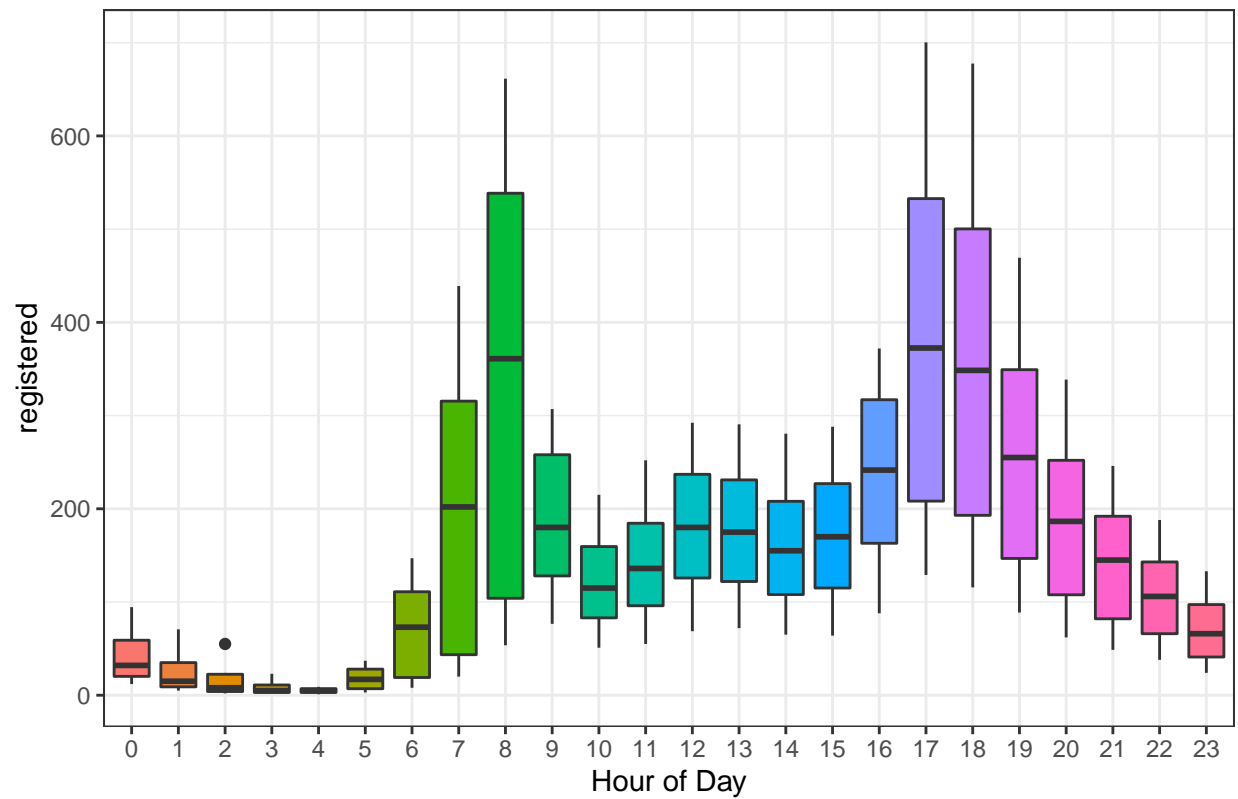## 10th, 25th, 50th, 75th, 90th percentile cnt of each hour of day


```r
ggsave("cnt.png")
```

```
## Saving 6.5 x 4.5 in image
```

```r
plot_by_hour(dataset, "registered")
```

```
## `summarise()` regrouping output by 'hr' (override with `.groups` argument)
```

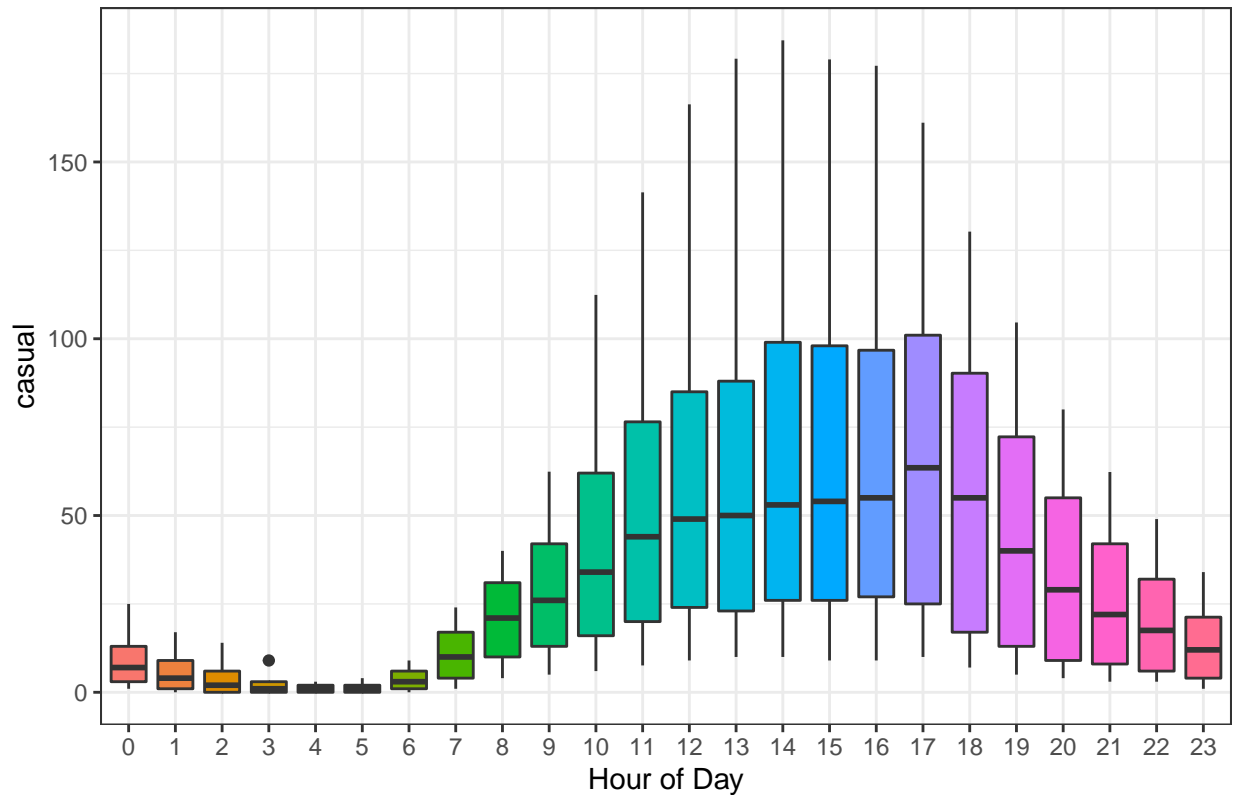## 10th, 25th, 50th, 75th, 90th percentile registered of each hour of day


```r
ggsave("registered.png")
```

```
## Saving 6.5 x 4.5 in image
```

```r
plot_by_hour(dataset, "casual")
```

```
## `summarise()` regrouping output by 'hr' (override with `.groups` argument)
```

10th, 25th, 50th, 75th, 90th percentile casual of each hour of day


```
ggsave("casual.png")
```

```
## Saving 6.5 x 4.5 in image
```

```
dataset %>% glimpse()
```

```
## Rows: 17,379
## Columns: 17
## $ instant    <int> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 1...
## $ dteday     <chr> "2011-01-01", "2011-01-01", "2011-01-01", "2011-01-01", ...
## $ season     <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,...
## $ yr         <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ mnth       <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,...
## $ hr         <int> 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16...
## $ holiday    <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ weekday    <int> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6,...
## $ workingday <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ weathersit <int> 1, 1, 1, 1, 1, 2, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 3,...
## $ temp       <dbl> 0.24, 0.22, 0.22, 0.24, 0.24, 0.24, 0.22, 0.20, 0.24, 0....
## $ atemp      <dbl> 0.2879, 0.2727, 0.2727, 0.2879, 0.2879, 0.2576, 0.2727, ...
## $ hum        <dbl> 0.81, 0.80, 0.80, 0.75, 0.75, 0.75, 0.80, 0.86, 0.75, 0....
## $ windspeed  <dbl> 0.0000, 0.0000, 0.0000, 0.0000, 0.0000, 0.0896, 0.0000, ...
## $ casual     <int> 3, 8, 5, 3, 0, 0, 2, 1, 1, 8, 12, 26, 29, 47, 35, 40, 41...
## $ registered <int> 13, 32, 27, 10, 1, 1, 0, 2, 7, 6, 24, 30, 55, 47, 71, 70...
## $ cnt        <int> 16, 40, 32, 13, 1, 1, 2, 3, 8, 14, 36, 56, 84, 94, 106, ...
```

```
day = convert_hour_to_day(dataset)
```

```
## 'summarise()' regrouping output by 'dteday', 'season', 'yr', 'mnth', 'holiday', 'weekday' (override u
```

```
day %>% glimpse()
```

```
## Rows: 731
## Columns: 16
## Groups: dteday, season, yr, mnth, holiday, weekday [731]
## $ instant    <int> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 1...
## $ dteday     <chr> "2011-01-01", "2011-01-02", "2011-01-03", "2011-01-04", ...
## $ season     <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,...
## $ yr         <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ mnth       <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,...
## $ holiday    <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,...
## $ weekday    <int> 6, 0, 1, 2, 3, 4, 5, 6, 0, 1, 2, 3, 4, 5, 6, 0, 1, 2, 3,...
## $ workingday <int> 0, 0, 1, 1, 1, 1, 1, 0, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1, 1,...
## $ weathersit <int> 2, 2, 1, 1, 1, 1, 2, 2, 1, 1, 2, 1, 1, 1, 2, 1, 2, 2, 2,...
## $ temp       <dbl> 0.34416667, 0.36347826, 0.19636364, 0.20000000, 0.226956...
## $ atemp      <dbl> 0.36362500, 0.35373913, 0.18940455, 0.21212174, 0.229269...
## $ hum        <dbl> 0.8058333, 0.6960870, 0.4372727, 0.5904348, 0.4369565, 0...
## $ windspeed  <dbl> 0.16044583, 0.24853913, 0.24830909, 0.16029565, 0.186900...
## $ casual     <int> 331, 131, 120, 108, 82, 88, 148, 68, 54, 41, 43, 25, 38,...
## $ registered <int> 654, 670, 1229, 1454, 1518, 1518, 1362, 891, 768, 1280, ...
## $ cnt        <int> 985, 801, 1349, 1562, 1600, 1606, 1510, 959, 822, 1321, ...
```

```
one = lm(cnt ~ season + yr + mnth + hr + holiday + weekday + weathersit + temp + atemp + hum + windspee
```

```
full_cnt = lm(cnt ~ factor(season) + yr + factor(mnth) +  factor(hr) + holiday + factor(weekday) + fact
```

```
summary(full_cnt)
```

```
##
## Call:
## lm(formula = cnt ~ factor(season) + yr + factor(mnth) + factor(hr) +
##     holiday + factor(weekday) + factor(weathersit) + temp + atemp +
##     hum + windspeed, data = dataset)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -393.87  -60.66   -7.96   51.31  439.18
##
## Coefficients:
##                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -83.630      6.633 -12.608  < 2e-16 ***
## factor(season)2      38.178      4.856   7.862 4.00e-15 ***
## factor(season)3      32.055      5.749   5.575 2.51e-08 ***
## factor(season)4      67.994      4.882  13.928  < 2e-16 ***
## yr                   85.431      1.563  54.658  < 2e-16 ***
## factor(mnth)2         3.426      3.920   0.874 0.382185
```

```
## factor(mnth)3          14.299      4.407    3.244 0.001179 **
## factor(mnth)4           6.230      6.548    0.951 0.341438
## factor(mnth)5          20.657      7.007    2.948 0.003201 **
## factor(mnth)6           6.238      7.205    0.866 0.386617
## factor(mnth)7         -13.269      8.082   -1.642 0.100645
## factor(mnth)8           7.897      7.879    1.002 0.316222
## factor(mnth)9          32.269      7.001    4.609 4.07e-06 ***
## factor(mnth)10         15.843      6.483    2.444 0.014549 *
## factor(mnth)11         -9.840      6.238   -1.577 0.114744
## factor(mnth)12         -6.256      4.954   -1.263 0.206718
## factor(hr)1           -17.294      5.345   -3.236 0.001216 **
## factor(hr)2           -26.369      5.364   -4.916 8.91e-07 ***
## factor(hr)3           -37.112      5.403   -6.869 6.67e-12 ***
## factor(hr)4           -40.263      5.408   -7.445 1.01e-13 ***
## factor(hr)5           -23.501      5.373   -4.374 1.23e-05 ***
## factor(hr)6            35.393      5.359    6.605 4.10e-11 ***
## factor(hr)7           170.418      5.348   31.864  < 2e-16 ***
## factor(hr)8           310.801      5.342   58.183  < 2e-16 ***
## factor(hr)9           163.101      5.347   30.501  < 2e-16 ***
## factor(hr)10          108.444      5.370   20.196  < 2e-16 ***
## factor(hr)11          133.843      5.409   24.742  < 2e-16 ***
## factor(hr)12          173.142      5.456   31.735  < 2e-16 ***
## factor(hr)13          168.102      5.494   30.600  < 2e-16 ***
## factor(hr)14          152.249      5.525   27.558  < 2e-16 ***
## factor(hr)15          161.707      5.535   29.213  < 2e-16 ***
## factor(hr)16          223.834      5.524   40.522  < 2e-16 ***
## factor(hr)17          377.535      5.491   68.750  < 2e-16 ***
## factor(hr)18          345.587      5.455   63.350  < 2e-16 ***
## factor(hr)19          236.919      5.404   43.841  < 2e-16 ***
## factor(hr)20          157.293      5.375   29.266  < 2e-16 ***
## factor(hr)21          107.840      5.353   20.147  < 2e-16 ***
## factor(hr)22           70.907      5.343   13.272  < 2e-16 ***
## factor(hr)23           32.112      5.338    6.015 1.83e-09 ***
## holiday               -26.228      4.881   -5.374 7.81e-08 ***
## factor(weekday)1        9.275      2.973    3.120 0.001812 **
## factor(weekday)2       10.849      2.904    3.736 0.000187 ***
## factor(weekday)3       13.625      2.900    4.698 2.64e-06 ***
## factor(weekday)4       13.149      2.901    4.532 5.87e-06 ***
## factor(weekday)5       17.445      2.892    6.032 1.65e-09 ***
## factor(weekday)6       16.089      2.878    5.591 2.30e-08 ***
## factor(weathersit)2   -10.409      1.920   -5.421 6.00e-08 ***
## factor(weathersit)3   -65.189      3.236  -20.145  < 2e-16 ***
## factor(weathersit)4   -62.580     58.893   -1.063 0.287970
## temp                  116.384     29.513    3.943 8.06e-05 ***
## atemp                 127.975     30.624    4.179 2.94e-05 ***
## hum                   -82.802      5.554  -14.909  < 2e-16 ***
## windspeed             -29.167      7.052   -4.136 3.55e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 101.7 on 17326 degrees of freedom
## Multiple R-squared:  0.6864, Adjusted R-squared:  0.6854
## F-statistic: 729.1 on 52 and 17326 DF,  p-value: < 2.2e-16
```

```
anova(full_cnt)
```

```
## Analysis of Variance Table
##
## Response: cnt
##                    Df    Sum Sq  Mean Sq  F value     Pr(>F)
## factor(season)      3  37729358 12576453 1215.085 < 2.2e-16 ***
## yr                  1  36598270 36598270 3535.973 < 2.2e-16 ***
## factor(mnth)       11   8058246   732568   70.778 < 2.2e-16 ***
## factor(hr)         23 289808800 12600383 1217.397 < 2.2e-16 ***
## holiday             1    149013   149013   14.397 0.0001485 ***
## factor(weekday)     6    627690   104615   10.107 3.486e-11 ***
## factor(weathersit)  3  10799819  3599940  347.811 < 2.2e-16 ***
## temp                1   6206987  6206987  599.693 < 2.2e-16 ***
## atemp               1    139779   139779   13.505 0.0002387 ***
## hum                 1   2137825  2137825  206.548 < 2.2e-16 ***
## windspeed           1    177057   177057   17.107 3.551e-05 ***
## Residuals       17326 179328746    10350
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
full_casual = lm(casual ~  factor(season) + yr + factor(mnth) +  factor(hr) + holiday + factor(weekday)
```

```
summary(full_casual)
```

```
##
## Call:
## lm(formula = casual ~ factor(season) + yr + factor(mnth) + factor(hr) +
##     holiday + factor(weekday) + factor(weathersit) + temp + atemp +
##     hum + windspeed, data = dataset)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -79.630 -19.007  -3.546  13.006 246.128
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)        0.1841     2.0623   0.089 0.928869
## factor(season)2    9.7072     1.5097   6.430 1.31e-10 ***
## factor(season)3    1.9228     1.7875   1.076 0.282081
## factor(season)4    2.6013     1.5178   1.714 0.086581 .
## yr                11.8397     0.4859  24.364  < 2e-16 ***
## factor(mnth)2     -1.5849     1.2189  -1.300 0.193513
## factor(mnth)3      7.9341     1.3702   5.790 7.14e-09 ***
## factor(mnth)4      5.2598     2.0359   2.584 0.009787 **
## factor(mnth)5      5.6265     2.1784   2.583 0.009808 **
## factor(mnth)6     -2.9009     2.2400  -1.295 0.195320
## factor(mnth)7     -4.3123     2.5127  -1.716 0.086140 .
## factor(mnth)8      0.4654     2.4496   0.190 0.849319
## factor(mnth)9      9.0255     2.1767   4.146 3.39e-05 ***
## factor(mnth)10    12.1262     2.0157   6.016 1.83e-09 ***
## factor(mnth)11     5.1543     1.9395   2.658 0.007878 **
```

```
## factor(mnth)12        0.1016      1.5403    0.066 0.947406
## factor(hr)1          -2.5891      1.6618   -1.558 0.119246
## factor(hr)2          -3.6757      1.6676   -2.204 0.027526 *
## factor(hr)3          -5.7041      1.6797   -3.396 0.000685 ***
## factor(hr)4          -6.1005      1.6814   -3.628 0.000286 ***
## factor(hr)5          -4.3862      1.6705   -2.626 0.008654 **
## factor(hr)6          -1.0960      1.6661   -0.658 0.510645
## factor(hr)7           5.0971      1.6628    3.065 0.002177 **
## factor(hr)8          13.5610      1.6608    8.165 3.42e-16 ***
## factor(hr)9          19.9028      1.6625   11.971  < 2e-16 ***
## factor(hr)10         32.1475      1.6694   19.257  < 2e-16 ***
## factor(hr)11         41.9485      1.6818   24.942  < 2e-16 ***
## factor(hr)12         48.3952      1.6962   28.531  < 2e-16 ***
## factor(hr)13         50.4106      1.7080   29.515  < 2e-16 ***
## factor(hr)14         52.4811      1.7176   30.555  < 2e-16 ***
## factor(hr)15         51.4150      1.7210   29.876  < 2e-16 ***
## factor(hr)16         50.6895      1.7174   29.516  < 2e-16 ***
## factor(hr)17         52.6869      1.7073   30.860  < 2e-16 ***
## factor(hr)18         41.1676      1.6960   24.273  < 2e-16 ***
## factor(hr)19         30.9774      1.6801   18.437  < 2e-16 ***
## factor(hr)20         20.4427      1.6710   12.234  < 2e-16 ***
## factor(hr)21         14.1920      1.6642    8.528  < 2e-16 ***
## factor(hr)22          9.6901      1.6611    5.834 5.52e-09 ***
## factor(hr)23          4.1180      1.6597    2.481 0.013104 *
## holiday              21.0385      1.5174   13.865  < 2e-16 ***
## factor(weekday)1    -31.1883      0.9243 -33.744  < 2e-16 ***
## factor(weekday)2    -34.3290      0.9027 -38.028  < 2e-16 ***
## factor(weekday)3    -34.2488      0.9016 -37.986  < 2e-16 ***
## factor(weekday)4    -34.1658      0.9019 -37.880  < 2e-16 ***
## factor(weekday)5    -26.2546      0.8991 -29.200  < 2e-16 ***
## factor(weekday)6      5.6440      0.8947    6.308 2.89e-10 ***
## factor(weathersit)2  -3.6156      0.5970   -6.057 1.42e-09 ***
## factor(weathersit)3 -11.1713      1.0061  -11.104  < 2e-16 ***
## factor(weathersit)4  -3.7241     18.3099   -0.203 0.838829
## temp                 73.1962      9.1758    7.977 1.59e-15 ***
## atemp                19.5023      9.5211    2.048 0.040542 *
## hum                 -28.7588      1.7267  -16.655  < 2e-16 ***
## windspeed           -16.7455      2.1925   -7.638 2.33e-14 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 31.63 on 17326 degrees of freedom
## Multiple R-squared:  0.5897, Adjusted R-squared:  0.5885
## F-statistic: 478.8 on 52 and 17326 DF,  p-value: < 2.2e-16
```

```r
anova(full_casual)
```

```
## Analysis of Variance Table
##
## Response: casual
##                  Df  Sum Sq Mean Sq   F value    Pr(>F)
## factor(season)    3 3490647 1163549 1163.0057 < 2.2e-16 ***
## yr                1  887172  887172  886.7573 < 2.2e-16 ***
## factor(mnth)     11  973513   88501   88.4599 < 2.2e-16 ***
```

```
## factor(hr)            23 13411788  583121   582.8489 < 2.2e-16 ***
## holiday                1    95022   95022    94.9773 < 2.2e-16 ***
## factor(weekday)        6  4213961  702327   701.9989 < 2.2e-16 ***
## factor(weathersit)     3   595260  198420   198.3275 < 2.2e-16 ***
## temp                   1   942490  942490   942.0494 < 2.2e-16 ***
## atemp                  1     4922    4922     4.9193   0.02657 *
## hum                    1   238445  238445   238.3332 < 2.2e-16 ***
## windspeed              1    58362   58362    58.3342 2.327e-14 ***
## Residuals          17326 17334094    1000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
full_registered = lm(registered ~ factor(season) + yr + factor(mnth) +  factor(hr) + holiday + factor(we

summary(full_registered)
```

```
##
## Call:
## lm(formula = registered ~ factor(season) + yr + factor(mnth) +
##     factor(hr) + holiday + factor(weekday) + factor(weathersit) +
##     temp + atemp + hum + windspeed, data = dataset)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -369.82  -48.69   -6.11   45.19  421.60
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       -83.8143     5.5697 -15.048  < 2e-16 ***
## factor(season)2    28.4705     4.0774   6.982 3.01e-12 ***
## factor(season)3    30.1319     4.8275   6.242 4.43e-10 ***
## factor(season)4    65.3929     4.0992  15.952  < 2e-16 ***
## yr                 73.5911     1.3124  56.073  < 2e-16 ***
## factor(mnth)2       5.0110     3.2919   1.522  0.12797
## factor(mnth)3       6.3650     3.7006   1.720  0.08545 .
## factor(mnth)4       0.9699     5.4984   0.176  0.85998
## factor(mnth)5      15.0309     5.8834   2.555  0.01063 *
## factor(mnth)6       9.1387     6.0496   1.511  0.13090
## factor(mnth)7      -8.9567     6.7861  -1.320  0.18690
## factor(mnth)8       7.4316     6.6158   1.123  0.26132
## factor(mnth)9      23.2437     5.8787   3.954 7.72e-05 ***
## factor(mnth)10      3.7172     5.4440   0.683  0.49474
## factor(mnth)11    -14.9940     5.2381  -2.862  0.00421 **
## factor(mnth)12     -6.3571     4.1598  -1.528  0.12648
## factor(hr)1       -14.7052     4.4881  -3.276  0.00105 **
## factor(hr)2       -22.6930     4.5038  -5.039 4.74e-07 ***
## factor(hr)3       -31.4078     4.5364  -6.924 4.56e-12 ***
## factor(hr)4       -34.1623     4.5409  -7.523 5.61e-14 ***
## factor(hr)5       -19.1147     4.5115  -4.237 2.28e-05 ***
## factor(hr)6        36.4886     4.4996   8.109 5.43e-16 ***
## factor(hr)7       165.3209     4.4907  36.814  < 2e-16 ***
## factor(hr)8       297.2401     4.4854  66.269  < 2e-16 ***
## factor(hr)9       143.1979     4.4900  31.892  < 2e-16 ***
## factor(hr)10       76.2969     4.5087  16.922  < 2e-16 ***
```

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```
## factor(hr)11          91.8946      4.5422  20.232  < 2e-16 ***
## factor(hr)12         124.7464      4.5811  27.231  < 2e-16 ***
## factor(hr)13         117.6913      4.6128  25.514  < 2e-16 ***
## factor(hr)14          99.7677      4.6388  21.507  < 2e-16 ***
## factor(hr)15         110.2923      4.6479  23.730  < 2e-16 ***
## factor(hr)16         173.1444      4.6381  37.331  < 2e-16 ***
## factor(hr)17         324.8483      4.6110  70.451  < 2e-16 ***
## factor(hr)18         304.4190      4.5806  66.459  < 2e-16 ***
## factor(hr)19         205.9418      4.5376  45.385  < 2e-16 ***
## factor(hr)20         136.8503      4.5129  30.324  < 2e-16 ***
## factor(hr)21          93.6480      4.4945  20.836  < 2e-16 ***
## factor(hr)22          61.2168      4.4861  13.646  < 2e-16 ***
## factor(hr)23          27.9944      4.4824   6.245 4.33e-10 ***
## holiday              -47.2666      4.0982 -11.534  < 2e-16 ***
## factor(weekday)1      40.4630      2.4962  16.210  < 2e-16 ***
## factor(weekday)2      45.1777      2.4380  18.530  < 2e-16 ***
## factor(weekday)3      47.8737      2.4351  19.660  < 2e-16 ***
## factor(weekday)4      47.3147      2.4359  19.424  < 2e-16 ***
## factor(weekday)5      43.6994      2.4283  17.996  < 2e-16 ***
## factor(weekday)6      10.4445      2.4164   4.322 1.55e-05 ***
## factor(weathersit)2   -6.7932      1.6122  -4.214 2.53e-05 ***
## factor(weathersit)3  -54.0178      2.7172 -19.880  < 2e-16 ***
## factor(weathersit)4  -58.8563     49.4504  -1.190  0.23398
## temp                  43.1880     24.7814   1.743  0.08139 .
## atemp                108.4725     25.7139   4.218 2.47e-05 ***
## hum                  -54.0429      4.6633 -11.589  < 2e-16 ***
## windspeed            -12.4215      5.9213  -2.098  0.03594 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 85.42 on 17326 degrees of freedom
## Multiple R-squared:  0.6824, Adjusted R-squared:  0.6815
## F-statistic:   716 on 52 and 17326 DF,  p-value: < 2.2e-16
```

```
anova(full_registered)
```

```
## Analysis of Variance Table
##
## Response: registered
##                       Df    Sum Sq  Mean Sq   F value    Pr(>F)
## factor(season)         3  19542008  6514003  892.6473 < 2.2e-16 ***
## yr                     1  26089137 26089137 3575.1286 < 2.2e-16 ***
## factor(mnth)          11   3883419   353038   48.3786 < 2.2e-16 ***
## factor(hr)            23 205926928  8953345 1226.9229 < 2.2e-16 ***
## holiday                1    482023   482023   66.0540  4.68e-16 ***
## factor(weekday)        6   5975881   995980  136.4843 < 2.2e-16 ***
## factor(weathersit)     3   6394176  2131392  292.0756 < 2.2e-16 ***
## temp                   1   2312114  2312114  316.8408 < 2.2e-16 ***
## atemp                  1     92244    92244   12.6406 0.0003785 ***
## hum                    1    948330   948330  129.9546 < 2.2e-16 ***
## windspeed              1     32113    32113    4.4006 0.0359414 *
## Residuals          17326 126434718     7297
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
round(cor(dataset[3:17]), digits = 3)
```

```
##            season     yr   mnth     hr holiday weekday workingday weathersit
## season      1.000 -0.011  0.830 -0.006  -0.010  -0.002      0.014     -0.015
## yr         -0.011  1.000 -0.010 -0.004   0.007  -0.004     -0.002     -0.019
## mnth        0.830 -0.010  1.000 -0.006   0.018   0.010     -0.003      0.005
## hr         -0.006 -0.004 -0.006  1.000   0.000  -0.003      0.002     -0.020
## holiday    -0.010  0.007  0.018  0.000   1.000  -0.102     -0.252     -0.017
## weekday    -0.002 -0.004  0.010 -0.003  -0.102   1.000      0.036      0.003
## workingday  0.014 -0.002 -0.003  0.002  -0.252   0.036      1.000      0.045
## weathersit -0.015 -0.019  0.005 -0.020  -0.017   0.003      0.045      1.000
## temp        0.312  0.041  0.202  0.138  -0.027  -0.002      0.055     -0.103
## atemp       0.319  0.039  0.208  0.134  -0.031  -0.009      0.055     -0.106
## hum         0.151 -0.084  0.164 -0.276  -0.011  -0.037      0.016      0.418
## windspeed  -0.150 -0.009 -0.135  0.137   0.004   0.012     -0.012      0.026
## casual      0.120  0.143  0.068  0.301   0.032   0.033     -0.301     -0.153
## registered  0.174  0.254  0.122  0.374  -0.047   0.022      0.134     -0.121
## cnt         0.178  0.250  0.121  0.394  -0.031   0.027      0.030     -0.142
##             temp  atemp    hum windspeed casual registered    cnt
## season      0.312  0.319  0.151    -0.150  0.120      0.174  0.178
## yr          0.041  0.039 -0.084    -0.009  0.143      0.254  0.250
## mnth        0.202  0.208  0.164    -0.135  0.068      0.122  0.121
## hr          0.138  0.134 -0.276     0.137  0.301      0.374  0.394
## holiday    -0.027 -0.031 -0.011     0.004  0.032     -0.047 -0.031
## weekday    -0.002 -0.009 -0.037     0.012  0.033      0.022  0.027
## workingday  0.055  0.055  0.016    -0.012 -0.301      0.134  0.030
## weathersit -0.103 -0.106  0.418     0.026 -0.153     -0.121 -0.142
## temp        1.000  0.988 -0.070    -0.023  0.460      0.335  0.405
## atemp       0.988  1.000 -0.052    -0.062  0.454      0.333  0.401
## hum        -0.070 -0.052  1.000    -0.290 -0.347     -0.274 -0.323
## windspeed  -0.023 -0.062 -0.290     1.000  0.090      0.082  0.093
## casual      0.460  0.454 -0.347     0.090  1.000      0.507  0.695
## registered  0.335  0.333 -0.274     0.082  0.507      1.000  0.972
## cnt         0.405  0.401 -0.323     0.093  0.695      0.972  1.000
```