shrub_volume

Charles

2023-03-07

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

Including Plots

You can also embed plots, for example:
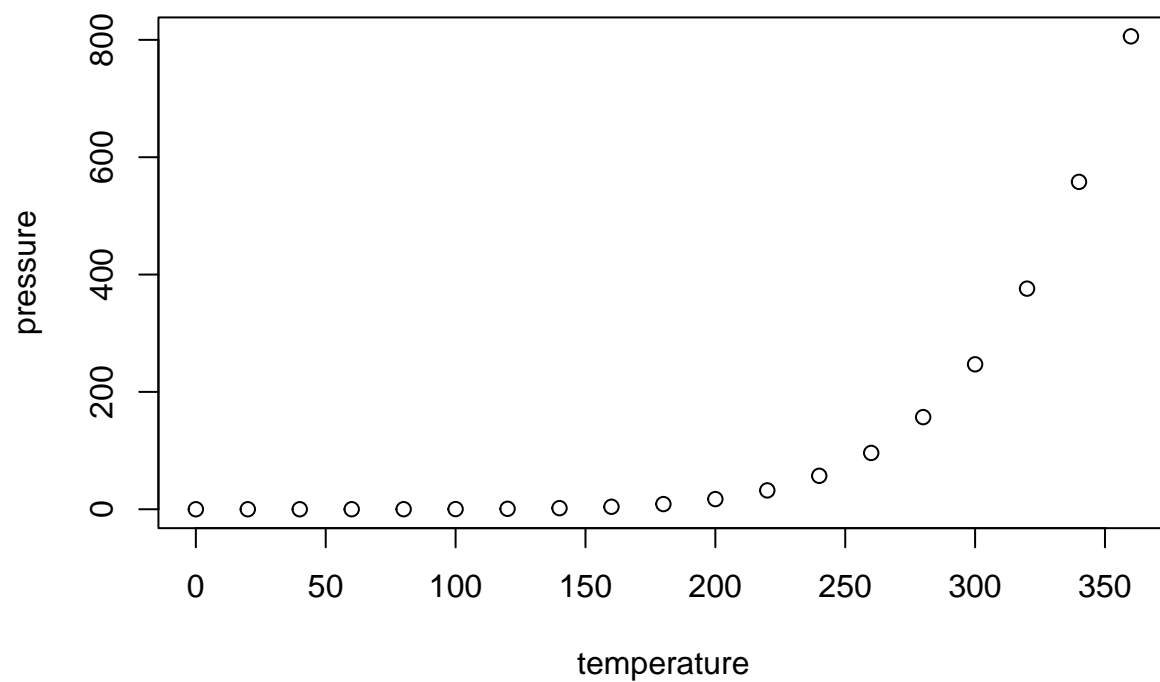
Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.

```
library(readr)
shrub_data <- read.csv(file = "../data-raw/shrub-volume-data.csv")
head(shrub_data)
```

```
##   site experiment length width height
## 1    1          1    2.2   1.3    9.6
## 2    1          2    2.1   2.2    7.6
## 3    1          3    2.7   1.5    2.2
## 4    2          1    3.0   4.5    1.5
## 5    2          2    3.1   3.1    4.0
## 6    2          3    2.5   2.8    3.0
```

```
select(shrub_data, length)
```

```
##   length
## 1    2.2
## 2    2.1
## 3    2.7
## 4    3.0
## 5    3.1
## 6    2.5
## 7    1.9
```

```
## 8       1.1
## 9       3.5
## 10      2.9
## 11      4.5
## 12      1.2
```

```
select(shrub_data, site, experiment)
```

```
##    site experiment
## 1     1          1
## 2     1          2
## 3     1          3
## 4     2          1
## 5     2          2
## 6     2          3
## 7     3          1
## 8     3          2
## 9     3          3
## 10    4          1
## 11    4          2
## 12    4          3
```

```
shrub_data <- mutate(shrub_data, area = length * width)
head(shrub_data)
```

```
##   site experiment length width height  area
## 1    1          1    2.2   1.3    9.6  2.86
## 2    1          2    2.1   2.2    7.6  4.62
## 3    1          3    2.7   1.5    2.2  4.05
## 4    2          1    3.0   4.5    1.5 13.50
## 5    2          2    3.1   3.1    4.0  9.61
## 6    2          3    2.5   2.8    3.0  7.00
```

```
arrange(shrub_data, length)
```

```
##    site experiment length width height  area
## 1     3          2    1.1   0.5    2.3  0.55
## 2     4          3    1.2   1.8    2.7  2.16
## 3     3          1    1.9   1.8    4.5  3.42
## 4     1          2    2.1   2.2    7.6  4.62
## 5     1          1    2.2   1.3    9.6  2.86
## 6     2          3    2.5   2.8    3.0  7.00
## 7     1          3    2.7   1.5    2.2  4.05
## 8     4          1    2.9   2.7    3.2  7.83
## 9     2          1    3.0   4.5    1.5 13.50
## 10    2          2    3.1   3.1    4.0  9.61
## 11    3          3    3.5   2.0    7.5  7.00
## 12    4          2    4.5   4.8    6.5 21.60
```

```
filter(shrub_data, height > 5)
```

```
##   site experiment length width height  area
## 1    1          1    2.2   1.3    9.6  2.86
## 2    1          2    2.1   2.2    7.6  4.62
## 3    3          3    3.5   2.0    7.5  7.00
## 4    4          2    4.5   4.8    6.5 21.60
```

```
filter(shrub_data, height > 4 & width > 2)
```

```
##   site experiment length width height  area
## 1    1          2    2.1   2.2    7.6  4.62
## 2    4          2    4.5   4.8    6.5 21.60
```

```
filter(shrub_data, experiment == 1 | experiment == 3)
```

```
##   site experiment length width height  area
## 1    1          1    2.2   1.3    9.6  2.86
## 2    1          3    2.7   1.5    2.2  4.05
## 3    2          1    3.0   4.5    1.5 13.50
## 4    2          3    2.5   2.8    3.0  7.00
## 5    3          1    1.9   1.8    4.5  3.42
## 6    3          3    3.5   2.0    7.5  7.00
## 7    4          1    2.9   2.7    3.2  7.83
## 8    4          3    1.2   1.8    2.7  2.16
```

```
filter(shrub_data, !is.na(height))
```

```
##    site experiment length width height  area
## 1     1          1    2.2   1.3    9.6  2.86
## 2     1          2    2.1   2.2    7.6  4.62
## 3     1          3    2.7   1.5    2.2  4.05
## 4     2          1    3.0   4.5    1.5 13.50
## 5     2          2    3.1   3.1    4.0  9.61
## 6     2          3    2.5   2.8    3.0  7.00
## 7     3          1    1.9   1.8    4.5  3.42
## 8     3          2    1.1   0.5    2.3  0.55
## 9     3          3    3.5   2.0    7.5  7.00
## 10    4          1    2.9   2.7    3.2  7.83
## 11    4          2    4.5   4.8    6.5 21.60
## 12    4          3    1.2   1.8    2.7  2.16
```

```
shrub_volumes = mutate(shrub_data, volume = area * height)
head(shrub_volumes)
```

```
##   site experiment length width height  area volume
## 1    1          1    2.2   1.3    9.6  2.86 27.456
## 2    1          2    2.1   2.2    7.6  4.62 35.112
## 3    1          3    2.7   1.5    2.2  4.05  8.910
## 4    2          1    3.0   4.5    1.5 13.50 20.250
## 5    2          2    3.1   3.1    4.0  9.61 38.440
## 6    2          3    2.5   2.8    3.0  7.00 21.000
```

```
shrub_dims <- read.csv('../data-raw/shrub-volume-data.csv')
by_site <- group_by(shrub_dims, experiment)
avg_height <- summarize(by_site, avg_height = mean(height))
head(avg_height)
```

```
## # A tibble: 3 x 2
##   experiment avg_height
##        <int>      <dbl>
## 1          1        4.7
## 2          2        5.1
## 3          3       3.85
```

```
shrub_dims <- read.csv('../data-raw/shrub-volume-data.csv')
by_site <- group_by(shrub_dims, site)
avg_height <- summarize(by_site, avg_height = max(height))
head(avg_height)
```

```
## # A tibble: 4 x 2
##    site avg_height
##   <int>      <dbl>
## 1     1        9.6
## 2     2          4
## 3     3        7.5
## 4     4        6.5
```

PIPING

```
read.csv('../data-raw/shrub-volume-data.csv') %>%
group_by(site) %>%
summarize(avg_height = max(height)) ->
avg_height2
head(avg_height2)
```

```
## # A tibble: 4 x 2
##    site avg_height
##   <int>      <dbl>
## 1     1        9.6
## 2     2          4
## 3     3        7.5
## 4     4        6.5
```

```
read.csv("../data-raw/shrub-volume-data.csv") |>
  mutate(volume = length * width * height) |>
  group_by(site) |>
  summarize(mean_volume = max(volume))
```

```
## # A tibble: 4 x 2
##    site mean_volume
```

```
##    <int>      <dbl>
## 1      1       35.1
## 2      2       38.4
## 3      3       52.5
## 4      4      140.
```

```r
read.csv("../data-raw/shrub-volume-data.csv") |>
  mutate(volume = length * width * height) |>
  group_by(experiment) |>
  summarize(mean_volume = mean(volume))
```

```
## # A tibble: 3 x 2
##    experiment mean_volume
##         <int>       <dbl>
## 1           1        22.0
## 2           2        53.8
## 3           3        22.1
```