ExploratoryDataAnalysis2

Contents

Comparing Two Variables.

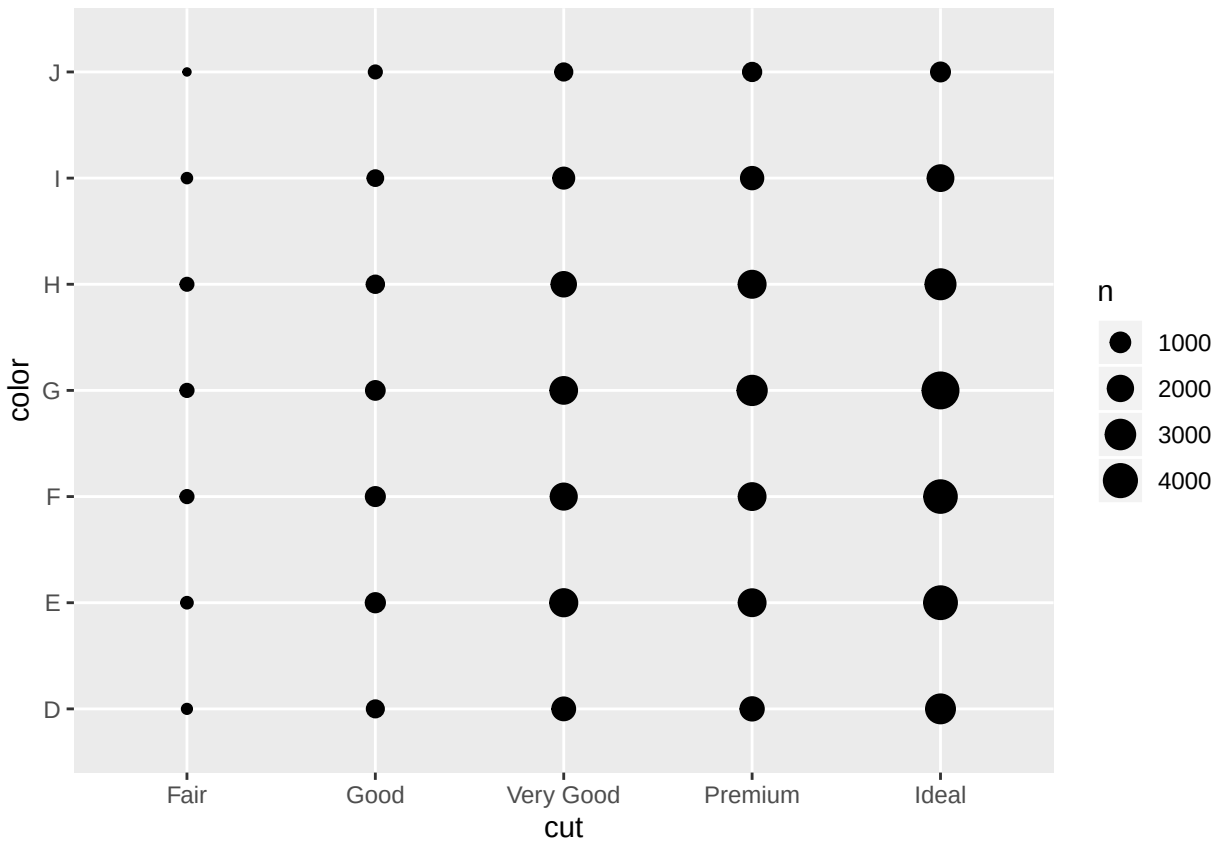
Today we will continue to discuss Exploratory Data Analysis (EDA).

1. Two categorical variables.
2. One categorical variable and one numeric variable.
3. Two numeric variables.

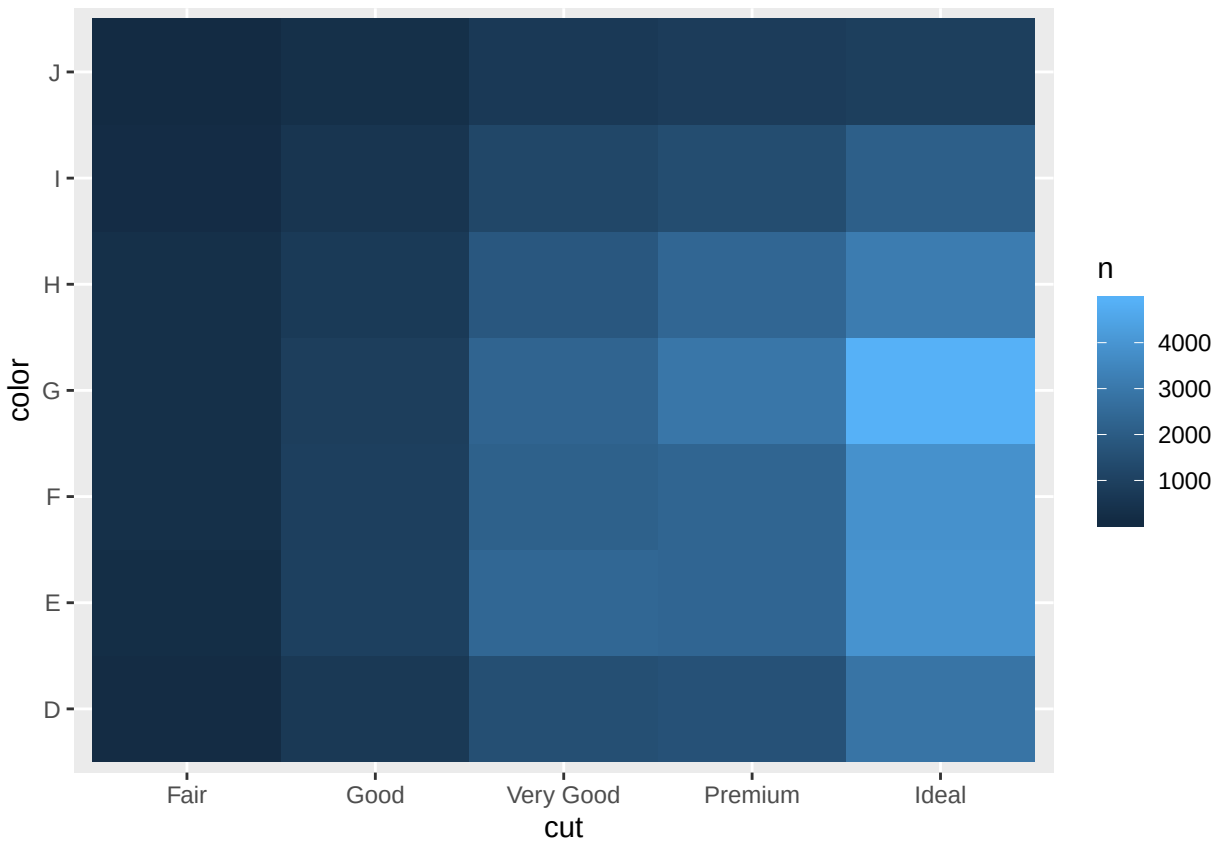
```
library(tidyverse)
```

Two categorical variables.

```
diamonds %>% ggplot(aes(x = cut, y = color)) +
  geom_count()
```




```
diamonds %>%
  count(color, cut) %>%
  ggplot(mapping = aes(x = cut, y = color)) +
    geom_tile(mapping = aes(fill = n))
```




```
diamonds %>% count(color, cut)
```

```
## # A tibble: 35 x 3
##    color cut           n
##    <ord> <ord>     <int>
##  1 D     Fair        163
##  2 D     Good        662
##  3 D     Very Good  1513
##  4 D     Premium    1603
##  5 D     Ideal      2834
##  6 E     Fair        224
##  7 E     Good        933
##  8 E     Very Good  2400
##  9 E     Premium    2337
## 10 E     Ideal      3903
## # ... with 25 more rows
```

```
diamonds %>% group_by(color, cut) %>%
  summarise(n=n())
```

```
## # A tibble: 35 x 3
## # Groups:   color [7]
##    color cut           n
##    <ord> <ord>     <int>
##  1 D     Fair        163
##  2 D     Good        662
##  3 D     Very Good  1513
##  4 D     Premium    1603
```

```
##  5 D     Ideal      2834
##  6 E     Fair        224
##  7 E     Good        933
##  8 E     Very Good  2400
##  9 E     Premium    2337
## 10 E     Ideal      3903
## # ... with 25 more rows
```

Contingency table.

```
diamonds %>% group_by(color, cut) %>%
  summarise(n=n()) %>%
  spread(cut, n)
```

```
## # A tibble: 7 x 6
## # Groups:   color [7]
##   color  Fair  Good `Very Good` Premium Ideal
##   <ord> <int> <int>       <int>   <int> <int>
## 1 D       163   662        1513    1603  2834
## 2 E       224   933        2400    2337  3903
## 3 F       312   909        2164    2331  3826
## 4 G       314   871        2299    2924  4884
## 5 H       303   702        1824    2360  3115
## 6 I       175   522        1204    1428  2093
## 7 J       119   307         678     808   896
```

Using the new *pivot_wider()* function, that replaces the *spread()*. You will need to update the **tidyr** package to version 1.0. The new function has a name that makes more sense and is more memorable.

```
diamonds %>% group_by(color, cut) %>%
  summarise(n=n()) %>%
  pivot_wider(
    names_from = cut,
    values_from = n
  )
```

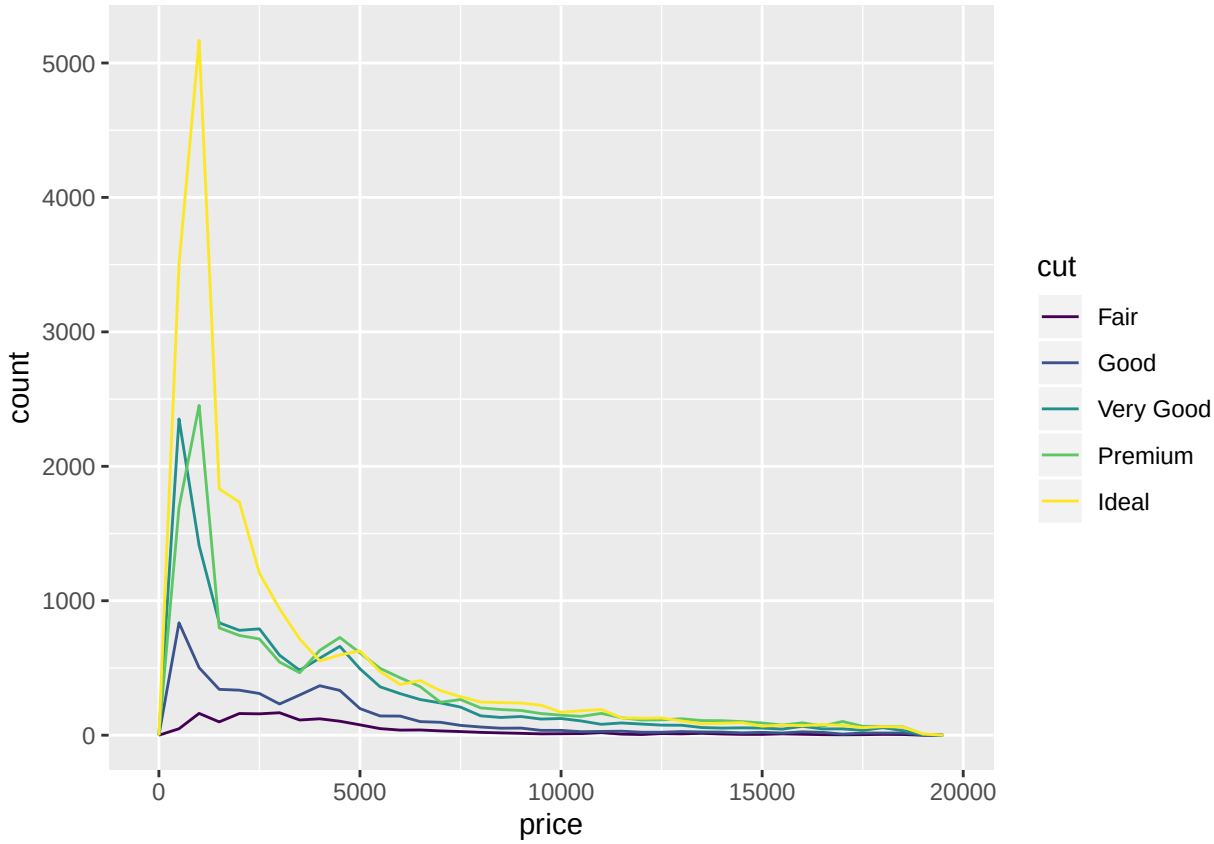
```
## # A tibble: 7 x 6
## # Groups:   color [7]
##   color  Fair  Good `Very Good` Premium Ideal
##   <ord> <int> <int>       <int>   <int> <int>
## 1 D       163   662        1513    1603  2834
## 2 E       224   933        2400    2337  3903
## 3 F       312   909        2164    2331  3826
## 4 G       314   871        2299    2924  4884
## 5 H       303   702        1824    2360  3115
## 6 I       175   522        1204    1428  2093
## 7 J       119   307         678     808   896
```

Export the data to an Excel file and try making this Pivot Table.

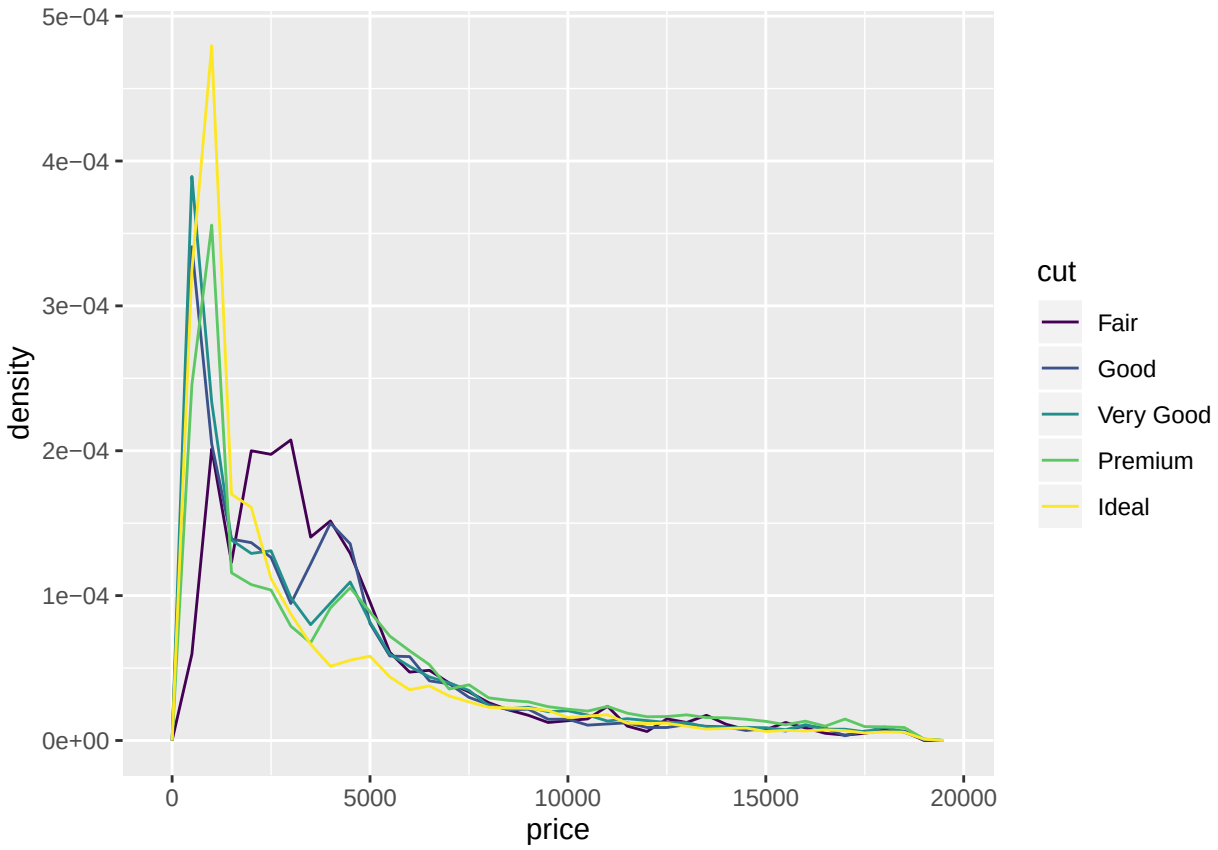
```
write.csv(diamonds, file="~/diamonds.csv")
```

One categorical variables and one numeric.

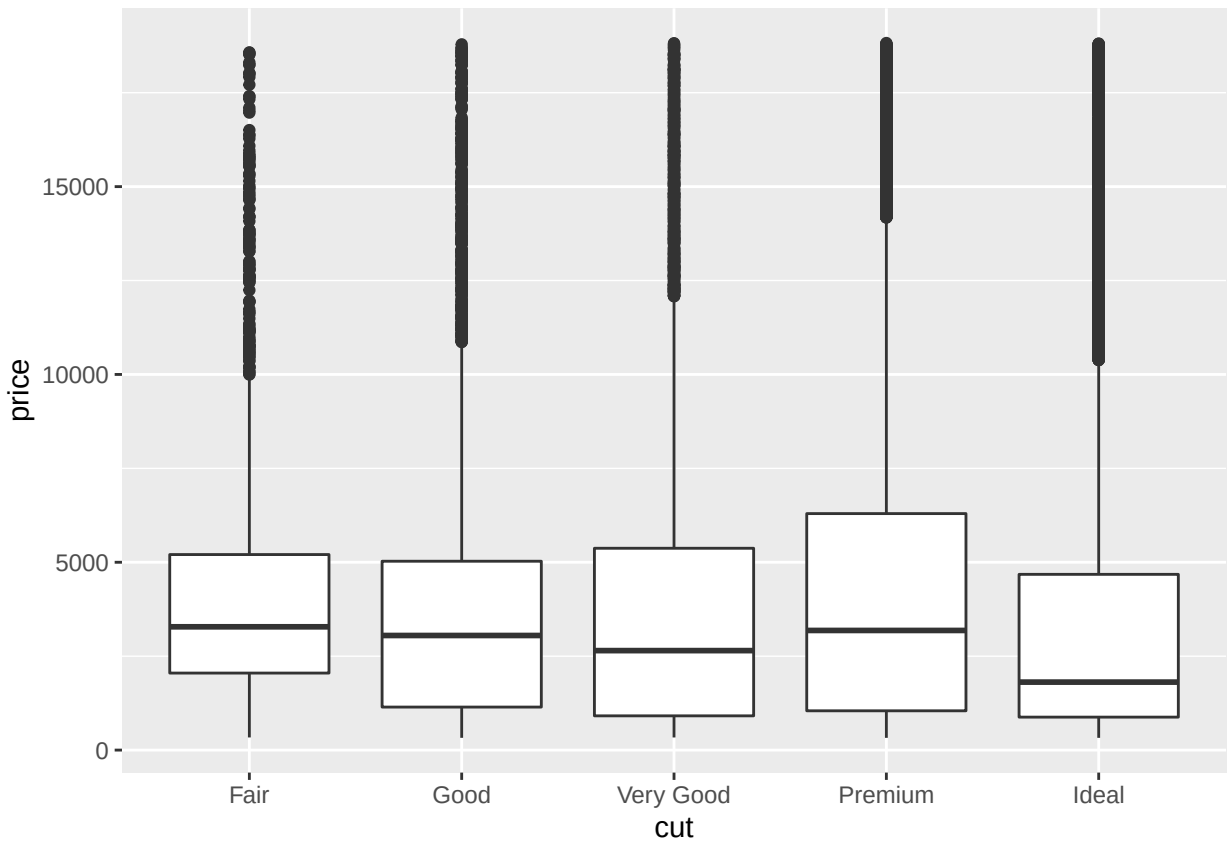
```
ggplot(data = diamonds, mapping = aes(x = price)) +
  geom_freqpoly(mapping = aes(colour = cut), binwidth = 500)
```




```
ggplot(data = diamonds, mapping = aes(x = price, y = ..density..)) +
  geom_freqpoly(mapping = aes(colour = cut), binwidth = 500)
```

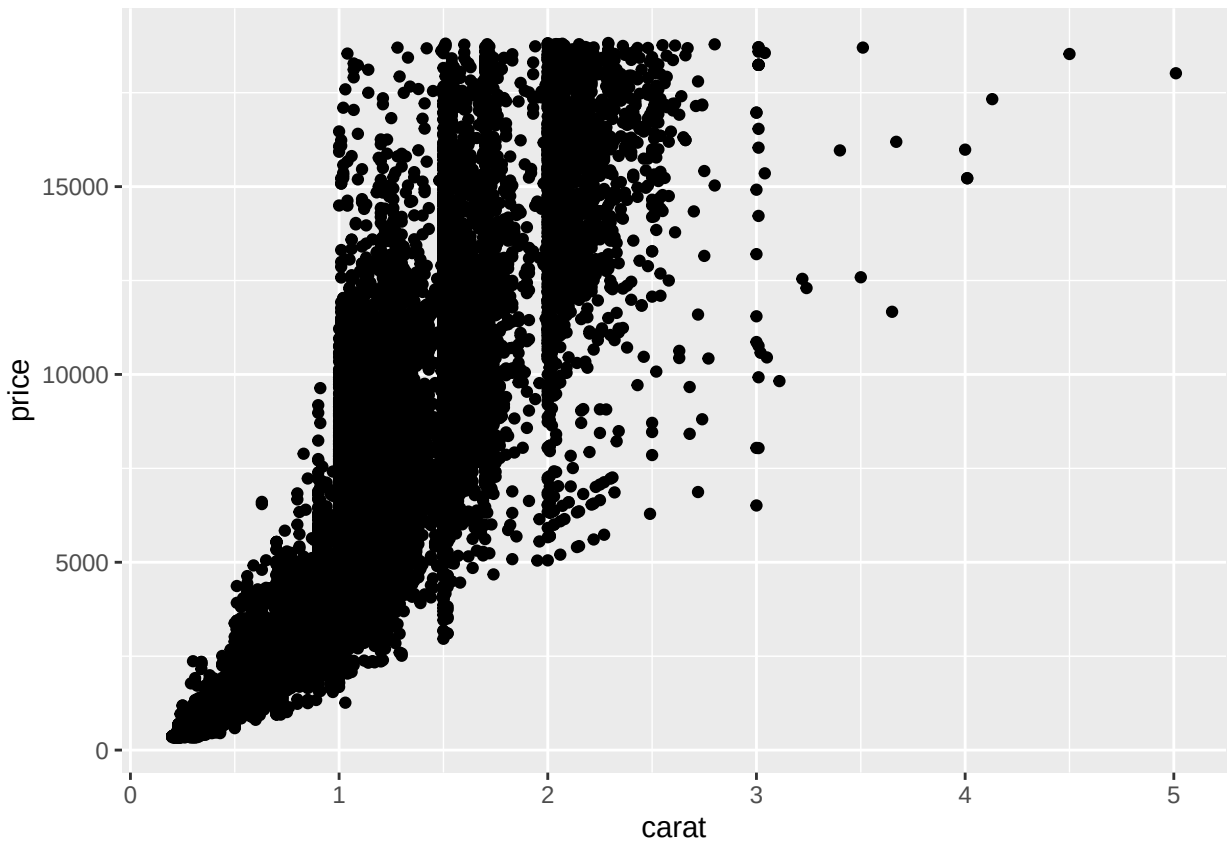



```
ggplot(data = diamonds, mapping = aes(x = cut, y = price)) +
  geom_boxplot()
```

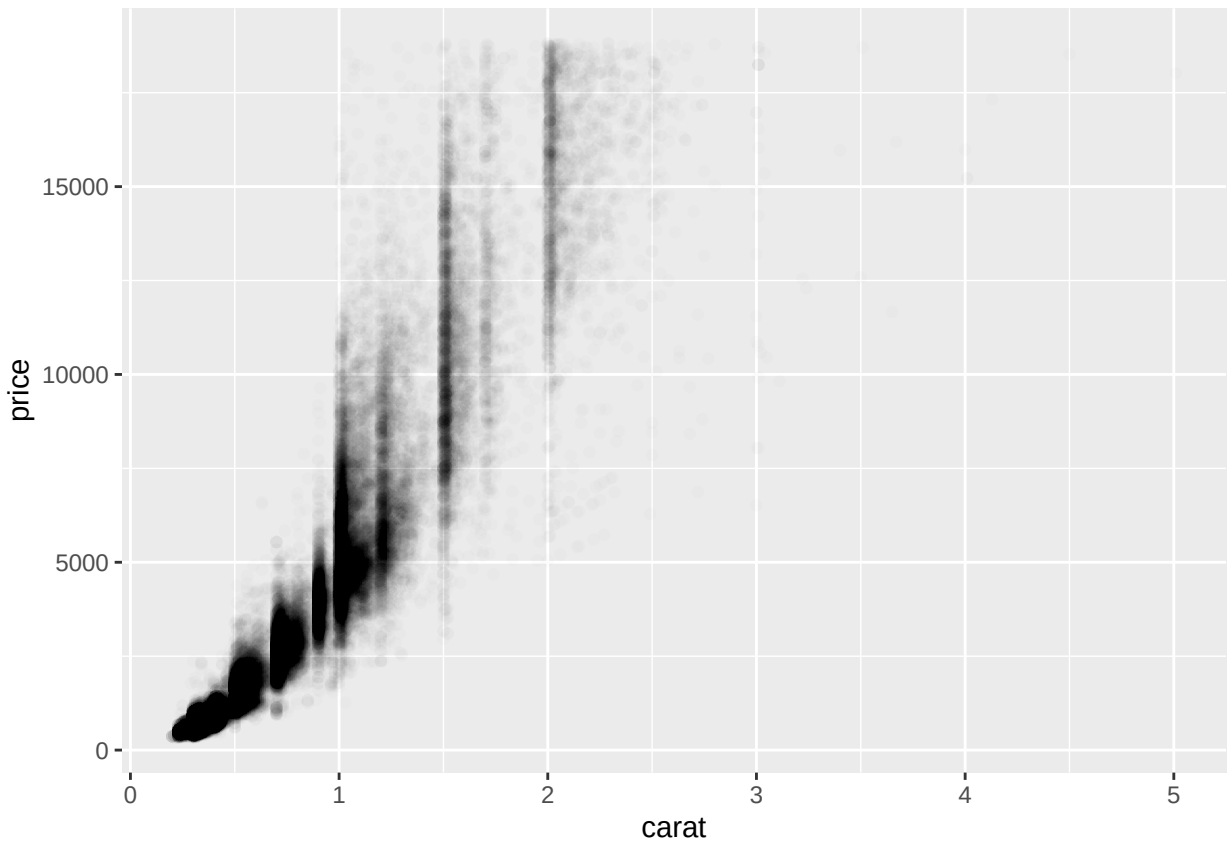


Two numeric variables.

```
ggplot(data = diamonds) +
  geom_point(mapping = aes(x = carat, y = price))
```

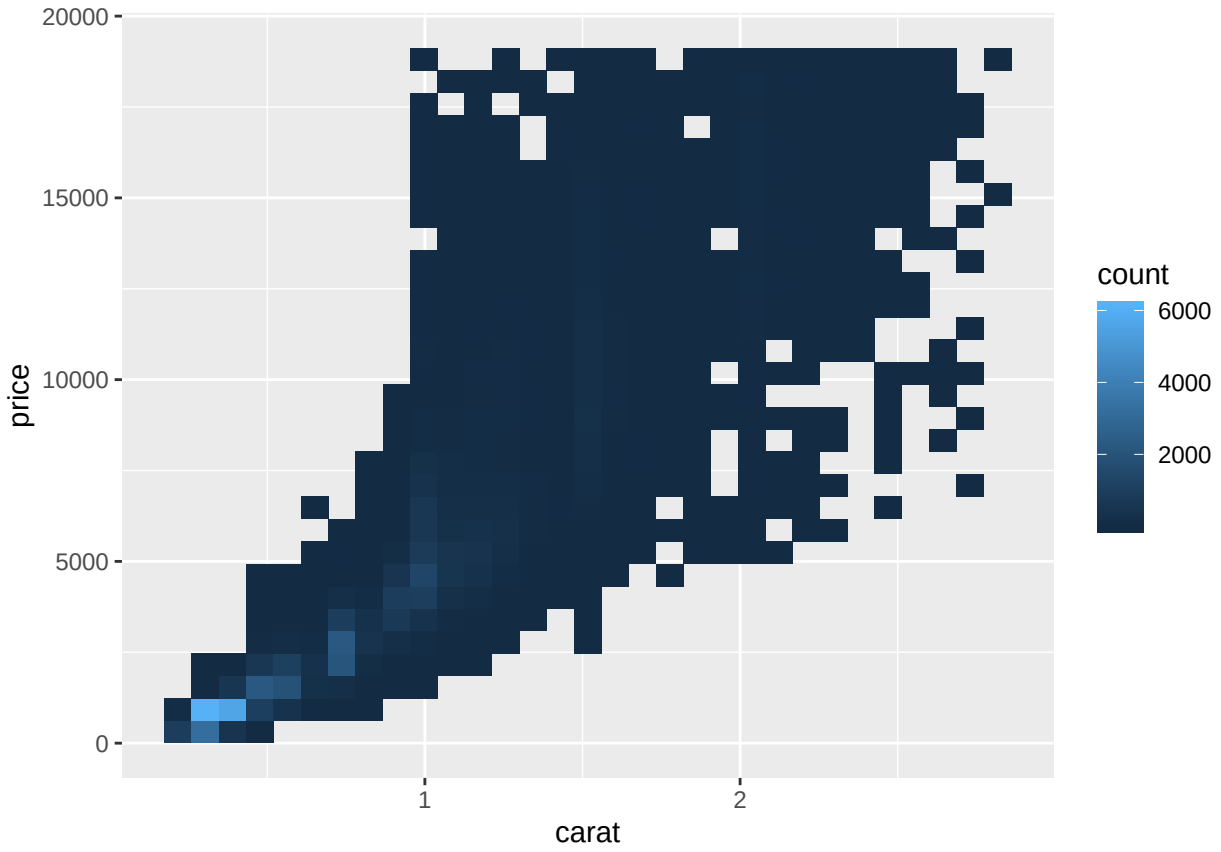



```r
ggplot(data = diamonds) +
  geom_point(mapping = aes(x = carat, y = price), alpha = 1 / 100)
```



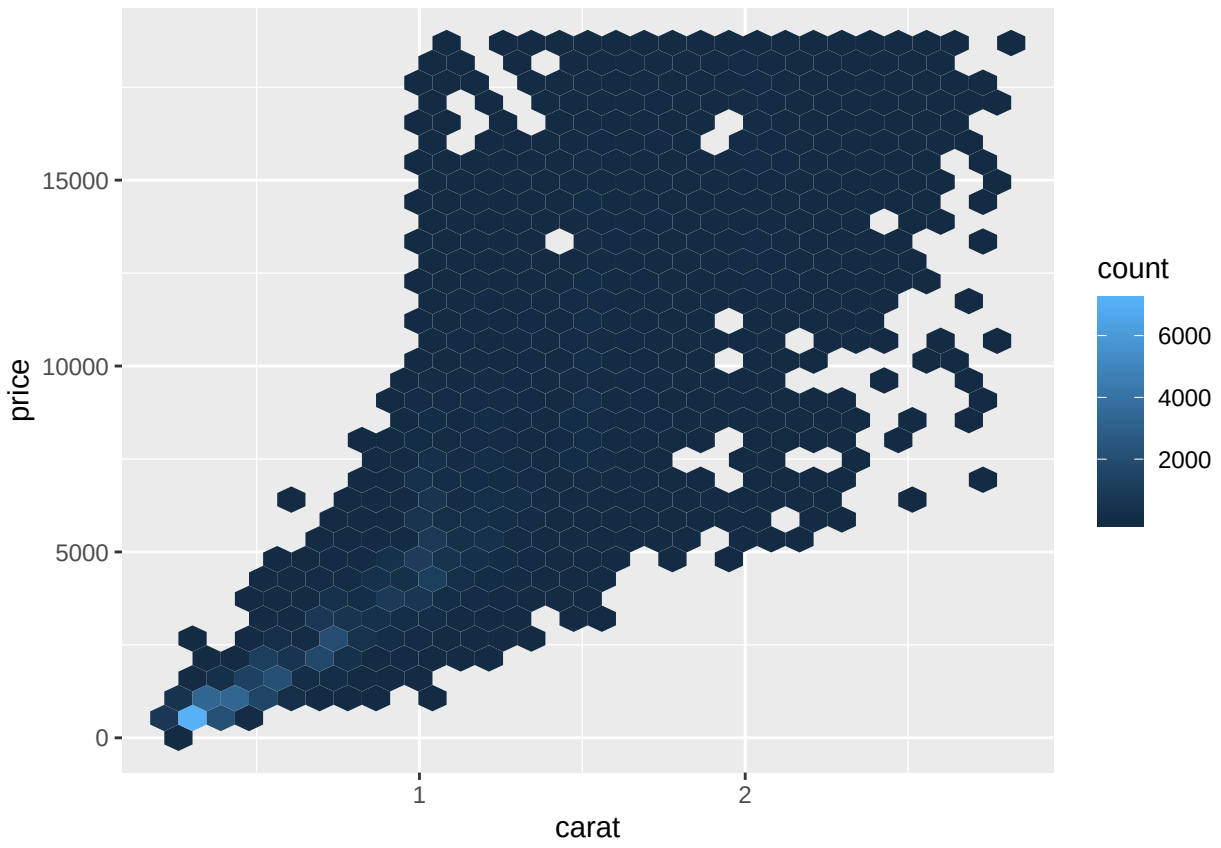

```
smaller <- diamonds %>%
  filter(carat < 3)

ggplot(data = smaller) +
  geom_bin2d(mapping = aes(x = carat, y = price))
```




```r
library(hexbin)

ggplot(data = smaller) +
  geom_hex(mapping = aes(x = carat, y = price))
```


price
15000
10000
5000
0
1
2
carat
count
6000
4000
2000