

Introduction to ggplot2

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Setup

```
#installation
# install.packages(c("ggplot2","ggthemes","cowplot"),
#                   dependencies=TRUE,
#                   repos="http://cran.revolutionanalytics.com/")

#loading
library(ggplot2) #grammar of graphics
library(ggthemes) #optional: switch to popular themes
library(cowplot) #optional: layouts
```

```
sessionInfo() #output trimmed
```

```
## R version 3.3.1 (2016-06-21)
## Platform: x86_64-w64-mingw32/x64 (64-bit)
## Running under: Windows 10 x64 (build 14393)
##
## locale:
## [1] LC_COLLATE=English_United States.1252
## [2] LC_CTYPE=English_United States.1252
## [3] LC_MONETARY=English_United States.1252
## [4] LC_NUMERIC=C
## [5] LC_TIME=English_United States.1252
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods   base
##
## other attached packages:
## [1] cowplot_0.7.0  ggthemes_3.4.0 ggplot2_2.2.1
```

ggplot2 Philosophy

“grammar of graphics, the idea that you can build every graph from the same components: a data set, a coordinate system, and geoms—visual marks that represent data points”

RStudio

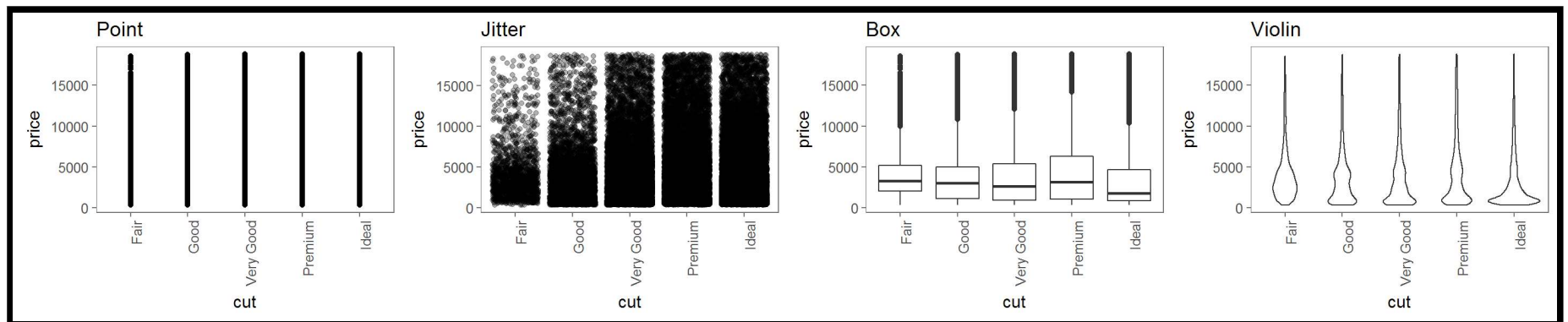
Data Details

```
head(diamonds)
```

```
## # A tibble: 6 × 10
##   carat      cut color clarity depth table price      x      y      z
##   <dbl>    <ord> <ord>   <ord> <dbl> <dbl> <int> <dbl> <dbl> <dbl>
## 1  0.23    Ideal   E      SI2   61.5   55   326   3.95   3.98   2.43
## 2  0.21  Premium   E      SI1   59.8   61   326   3.89   3.84   2.31
## 3  0.23    Good    E      VS1   56.9   65   327   4.05   4.07   2.31
## 4  0.29  Premium   I      VS2   62.4   58   334   4.20   4.23   2.63
## 5  0.31    Good    J      SI2   63.3   58   335   4.34   4.35   2.75
## 6  0.24 Very Good    J     VVS2   62.8   57   336   3.94   3.96   2.48
```

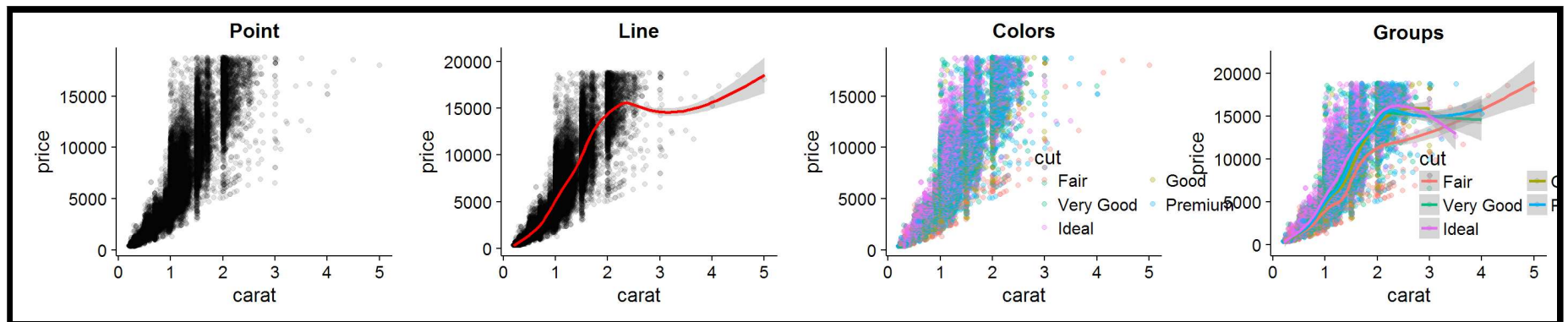
Introduction to Geoms

```
baseg=ggplot(diamonds, aes(x=cut,y=price))+  
  theme_few()+  
  theme(axis.text.x = element_text(angle = 90, hjust = 1))  
  
g_point=baseg+geom_point()+ggtitle("Point")  
g_jitter=baseg+geom_jitter(alpha=.3)+ggtitle("Jitter")  
g_box=baseg+geom_boxplot()+ggtitle("Box")  
g_violin=baseg+geom_violin()+ggtitle("Violin")  
  
plot_grid(g_point,g_jitter,g_box,g_violin,ncol=4) #display
```



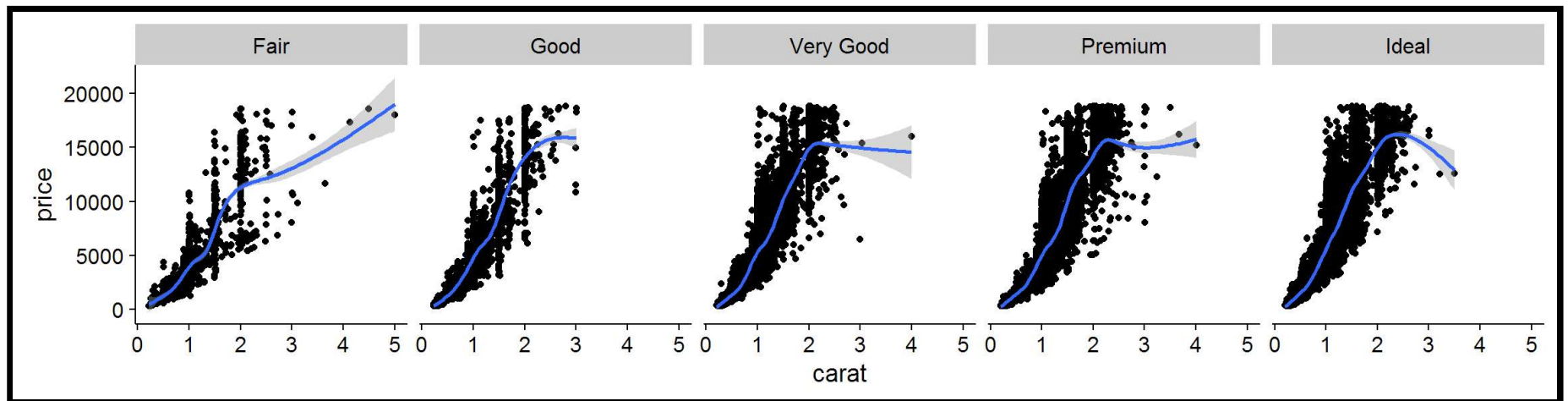
Overlaying Geoms

```
base_layer=ggplot(diamonds,aes(x=carat,y=price))+  
  theme(legend.position=c(.9,.3))+  
  guides(color=guide_legend(nrow=3,byrow=TRUE))  
  
g_point=base_layer+geom_point(alpha=.1)+ggtitle("Point")  
g_line=g_point+geom_smooth(color='red')+ggtitle("Line")  
g_colors=base_layer+geom_point(alpha=.3,aes(color=cut))+ggtitle('Colors')  
g_groups=g_colors+geom_smooth(aes(color=cut))+ggtitle("Groups")  
plot_grid(g_point,g_line,g_colors,g_groups,ncol=4)
```



Faceting: Small Multiples

```
base_layer+geom_point()+geom_smooth()+facet_grid(.~cut)
```



Resources

- [ggplot2 documentation](#)
- [R Graphics Cookbook](#)
- [StackOverflow](#)
- [Rstudio Cheat Sheet](#)