Cheatsheet: R Data Visualization using ggplot2

basics

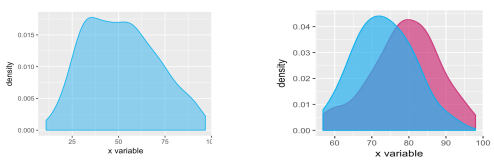
`ggplot(data, aes(xvar, yvar)`

This is creating the coordinate system for the plot. All plots must start with this. Once you have the coordinate system, you need to add a "geom"

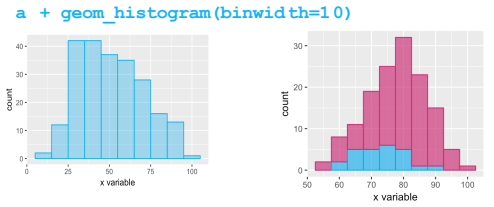
geoms: exploratory

`a <- ggplot(data, aes(var))`

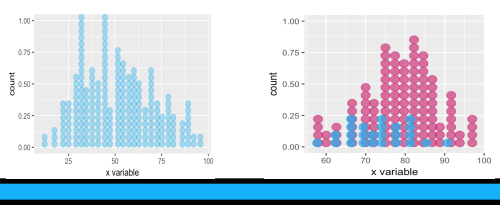
`a + geom_density()`



`a + geom_histogram(binwidth=10)`



`a + geom_dotplot(binwidth=10)`



geoms: two variables

`b <- ggplot(data, aes(xvar, yvar))`

x var = continuous; y var = continuous

`b + geom_point()`

`b + geom_point (color=factvar)`

`b + geom_smooth()`

`b + geom_smooth (method=lm)`

`b + geom_line()`

`b + geom_line (color=factvar)`

x var = discrete; y var = continuous

`b + geom_boxplot()`

`b +geom_boxplot (aes(fill=factvar))`

`b + geom_violin()`

`b + geom_bar()`

`b + geom_bar(stat ="identity")`

`b + geom_bar(stat = "identity", position = position_dodge())`

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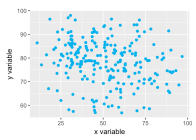
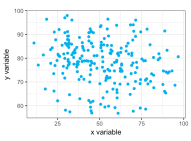
themes

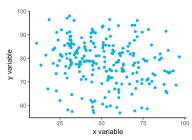
`+ theme_grey()`



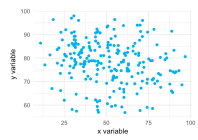
`+ theme_bw()`



`+ theme_classic()`



`+ theme_minimal()`



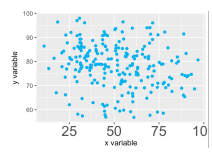
theme options

you can modify individual parts of a theme, such as:

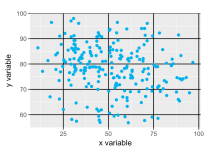
`theme(title, axis.text.x, axis.text.x.top, axis.text.y, axis.text.y.right, axis.ticks, axis.ticks.x, axis.ticks.y, axis.ticks.length, axis.line, axis.line.x, axis.line.y, panel.grid, panel.grid.major, panel.grid.minor, panel.grid.minor.x, panel.grid.minor.y, panel.background, plot.background)`

`element_text` `element_line` `element_rect`

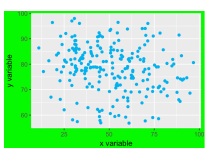
`a + theme(axis.text.x = element_text(size=20))`



`a + theme(panel.grid.major = element_line(color="black"))`



`a + theme(plot.background = element_rect(fill="green"))`



labels + titles

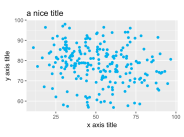
`+ xlab("x axis title")`

`+ ylab("y axis title")`

`+ ggtitle("a nice title")`

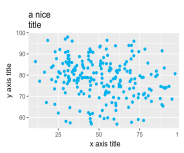
or, all together in one line:

`labs (x = "x axis title", y = "y axis title", title = "a nice title")`

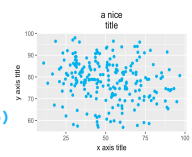


split up text:

`+ ggtitle ("a nice\ntitle")`

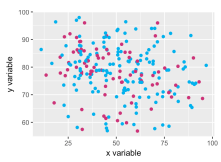


`+ ggtitle("a nice\ntitle")+ theme(plot.title = element_text(hjust = 0.5)`

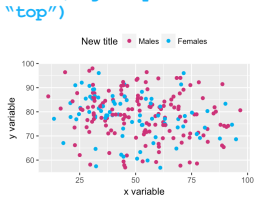


legends

`+ theme(legend.position ="none)`



`+ scale_color_manual(name = "New title", breaks = c("M","F"), labels = c("Males", "Females")+ theme(legend.position = "top")`



scales/color

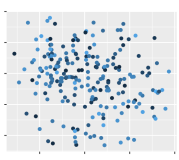
Color palettes:

sequential: `gradient`

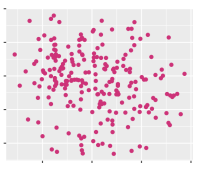
qualitative: `brewer`

diverging: `gradientn`

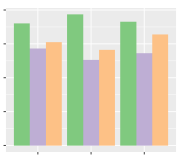
`+geom_point(aes (color= contvar))+ scale_fill_brewer (palette = "gradient")`



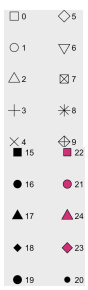
`+geom_point (color= "violetred3")`



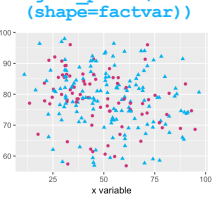
`+ scale_fill_brewer (palette = "Accent")`



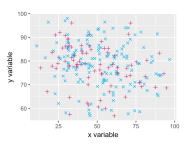
point shapes and sizes



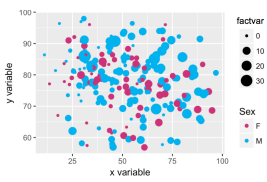
`+geom_point(aes (shape=factvar))`



`+geom_point(aes (shape=factvar))+ scale_shape_manual (values=c(3,4))`

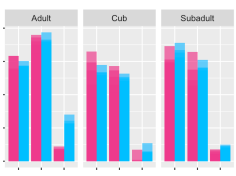


`+geom_point(aes (size=factvar))`

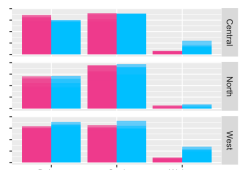


facet grids

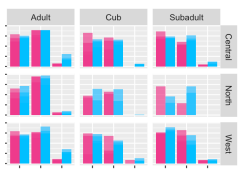
`+facet_grid(~Ageclass)`



`+facet_grid(Region~.)`

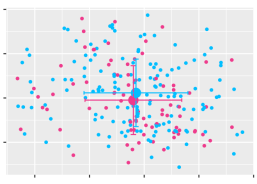


`+facet_grid(Region~Ageclass)`



centroids and error bars (SE)

```
centroids <- aggregate(cbind(x,y)~class,df,mean)
f <- function(z)sd(z)/sqrt(length(z))
se <- aggregate(cbind(se.x=x,se.y=y)~class,df,f)
centroids <- merge(centroids,se, by="class
```



```
ggplot(gg, aes(x,y,color=factor(class)))+geom_point(size=3)+
 geom_point(data=centroids, size=5)+
geom_errorbar (data=centroids,aes (ymin=yse.y,ymax=y+se.y),width=0.1)+
geom_errorbarh (data=centroids,aes (xmin=x-se.x,xmax=x+se.x),height=0.1)
```