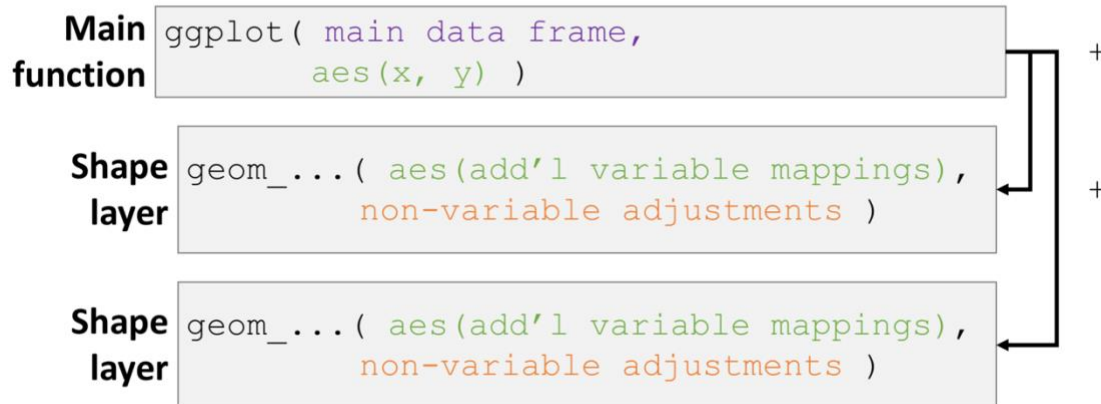# Tips for ggplot2

Plot creation steps

1. Set the data
2. Choose a shape layer
3. Map variables to aesthetics
4. Add non-variable adjustments
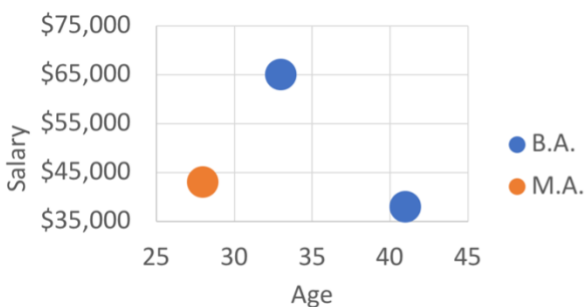
Basic ggplot2 syntax

data and aesthetics will carry through from main function to shape layers

```
Main      ggplot( main data frame,
function          aes(x, y) )                                    +

Shape     geom_...( aes(add'l variable mappings),
layer              non-variable adjustments )                    +

Shape     geom_...( aes(add'l variable mappings),
layer              non-variable adjustments )
```

Example with code

Name	Age	Salary	Highest Degree
Jane Smith	33	$65,000	B.A.
Abby Jones	28	$43,000	M.A.
Bridget Carden	41	$38,000	B.A.

```
ggplot(employees,
        aes(x=age,
            y=salary)) +
geom_point(aes(color=degree),
        size=10)
```

Other useful layers

Code	Description
`geom_hline(), geom_vline()`	Horizontal and vertical lines on chart
`geom_smooth(method="lm", se=F)`	Linear trend line based on the data
`geom_text()`	Text labels for individual datapoints
`annotate()`	Extra text and shapes, not related to data
`coord_flip()`	flip whatever has been mapped to x and y axes
`facet_wrap(~a), facet_grid(a~b)`	split plot into small multiples; use "." for blank
`labs(title=…, x=…, y=…)`	Add chart and axis titles
`theme_…()`	Use and/or customize a different theme
`base_size=…`	Increase or decrease size of most text elements
`scale_[aes]_[transform](…)`	Manipulate specific aes mappings
`scale_x_continuous()`	Edit a numerical x axis
`scale_x_log10()`	Apply a log transform to x axis
`scale_x_discrete()`	Edit a discrete x axis
`scale_fill_manual()`	Edit categorical fill values manually
common options:	
`limits=c(…)`	change minimum and maximum limits
`breaks=c(…)`	change where axis/legend breaks are
`labels=c(…)`	change labels on axes/legends
`values=c(…)`	set values for manual discrete color scale
`name=""`	change label for axis/legend