Tutorial 12 - More maps and ggplot practice

maps

- ▶ we can use point information about polygons describing the shape of country, state, and county boundaries to visualize spatial data in this context

- ▶ `map_data` is a function in `ggplot` that quickly converts boundary data from the `maps` package to a form usable by `ggplot`

- ▶ these maps are great for adding point data to

maps

We can also add points to the map.

```
statell<-read.csv("stateLatLong.csv,stringsAsFactors=FALSE)
```

```
ggplot(data=states) +
geom_polygon(aes(x=long,y=lat,group=group),color="black")
+ coord_quickmap()+
geom_point(data=statell,aes(x=Longitude,y=Latitude))
```

Challenge: Make a map with the points for each state proportional
to the number of people that play hockey in each state.

usmap

This package is good at making plots of states that can be color coded by particular data.

This package doesn't use cartesian coordinates (latitude and longitude); rather it uses "fips"

```
plot_usmap(regions="states")
```

usmap

Here is an example with built in data on the state population.

```
plot_usmap(data=statepop,values="pop_2015",color="red")
+ scale_fill_continuous(name="Population (2015)") +
theme(legend.position="right")
```

```
head(as.data.frame(statepop))
```

Challenge: use the hockey player data for each state and make a
heatmap of those data

More ggplot practice

Thanks for the good and bad figures you submitted on Monday!

There was a huge diversity of plot types and we used those to inspire a number of challenges, using the Iris dataset, we will have you try out today.

Make sure and use the ggplot cheatsheet and make your plots look more like the good plot you submitted, rather than the bad plot.

ggplot Challenges

Make these plots, but be sure to make them well (axes labels, easy to distinguish point types and colors, etc.)

1. Make a density plot with a density line for sepal width for each Iris species.

2. Make a boxplot for sepal length for each Iris species.

3. Make a scatter plot of sepal length vs sepal width with all data, regardless of species.

4. Because of all the overlapping points on the last figure, convert that plot to a bin2d or hex plot.