

R Summer School - Graphics II

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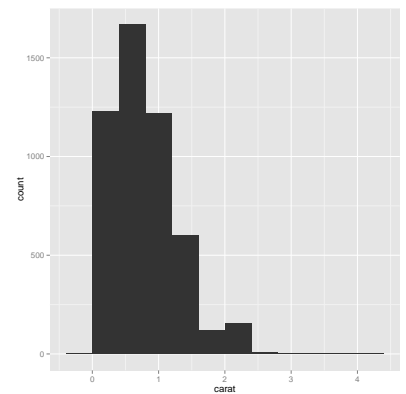
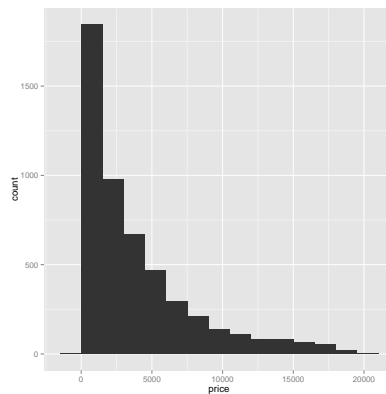
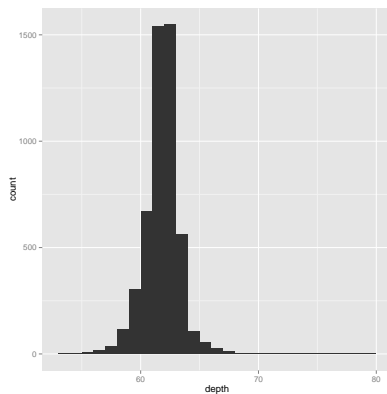
June 17, 2014

1 Visualising Data

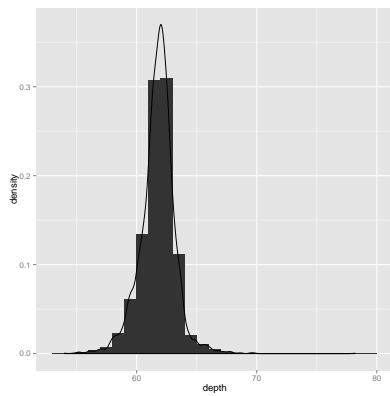
```
> library(ggplot2)
> data(diamonds)
> set.seed(1410)
> dsmall <- diamonds[sample(nrow(diamonds), 5000), ]
```

1.1 Histograms

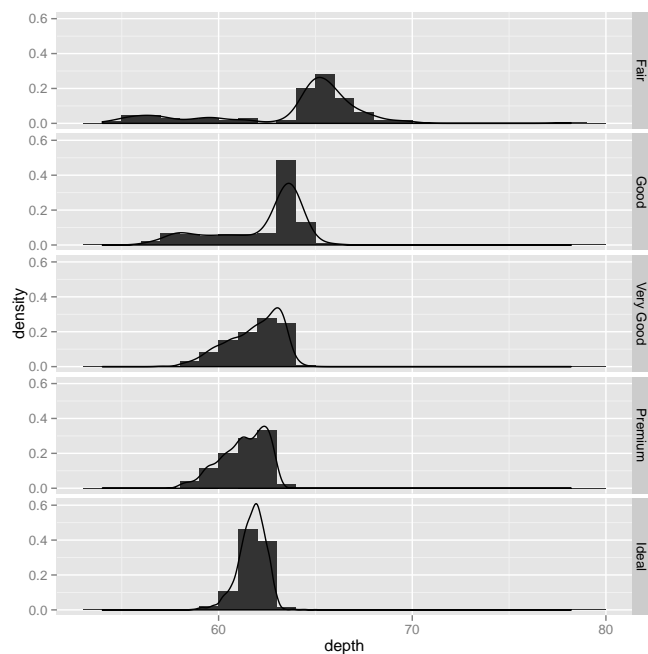
```
> p <- ggplot(data = dsmall)
> depth.hist <- p + geom_histogram(mapping = aes(x = depth), binwidth = 1)
> depth.hist
> price.hist <- p + geom_histogram(mapping = aes(x = price), binwidth = 1500)
> price.hist
> carat.hist <- p + geom_histogram(mapping = aes(x = carat), binwidth = 0.4)
> carat.hist
```



```
> carat.hist.density <- p + geom_histogram(mapping = aes(x = depth, y = ..density..),
  binwidth = 1) + geom_density(aes(x = depth))
> carat.hist.density
```

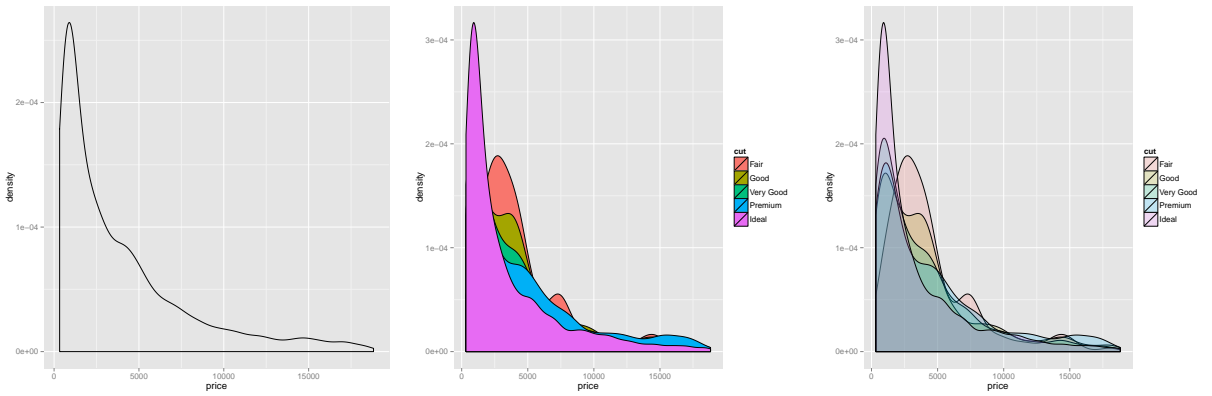


```
> carat.hist.facet <- carat.hist.density + facet_grid(cut ~.)
> carat.hist.facet
```



1.2 Density Plots

```
> ggplot(dsmall) + geom_density(aes(price))
> ggplot(dsmall) + geom_density(aes(price, fill = cut))
> ggplot(dsmall) + geom_density(aes(price, fill = cut), alpha = 1/5)
```



1.3 Scatter Plots

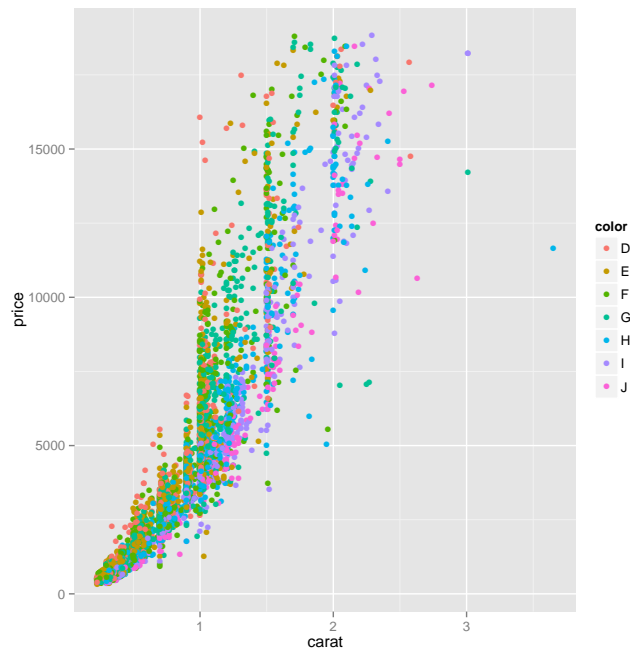
```

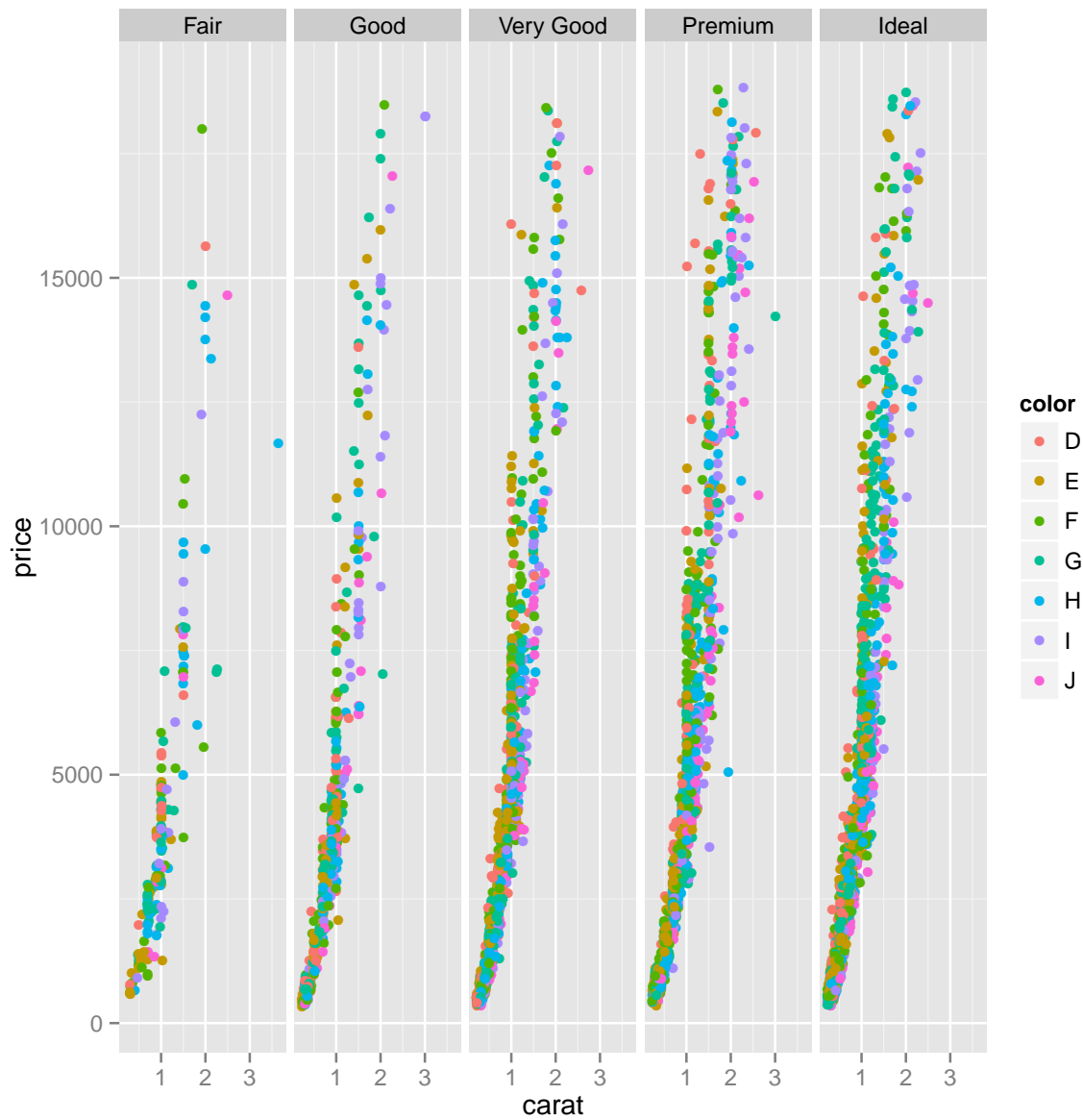
> ggplot(data = dsmall) + geom_point(aes(x = carat, y = price))

> ggplot(data = dsmall) + geom_point(aes(x = carat, y = price, colour = color))

> ggplot(data = dsmall) + geom_point(aes(x = carat, y = price, colour = color)) +
  facet_grid(.~cut)

```

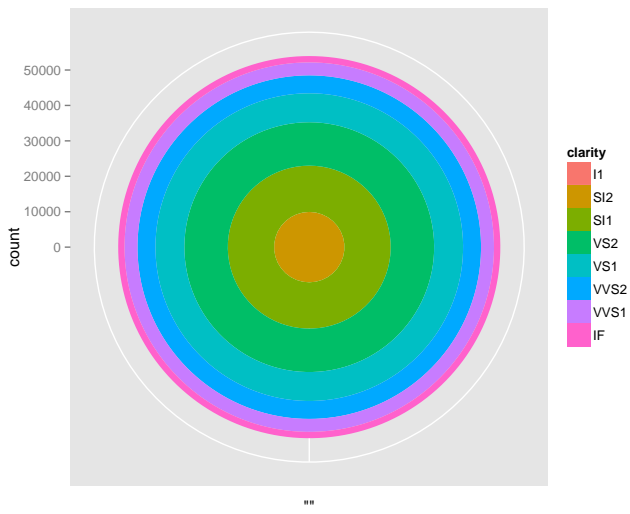
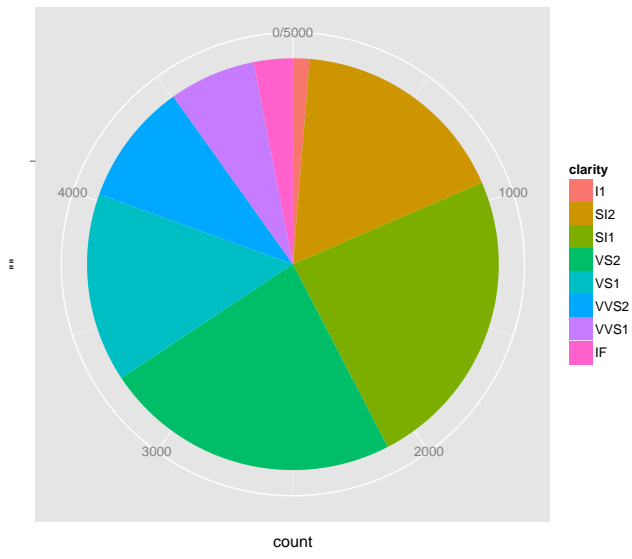




1.4 Pie and bullseye charts

```
> ggplot(dsmall) + geom_bar(aes(x = "", fill=clarity),width = 1) +
  coord_polar (theta="y")
```

```
> ggplot(diamonds,aes(x = "", fill=clarity)) + geom_bar(width = 1) +
  coord_polar (theta="x")
```



2 Graphing Statistical Models

```
> data(economics)
```

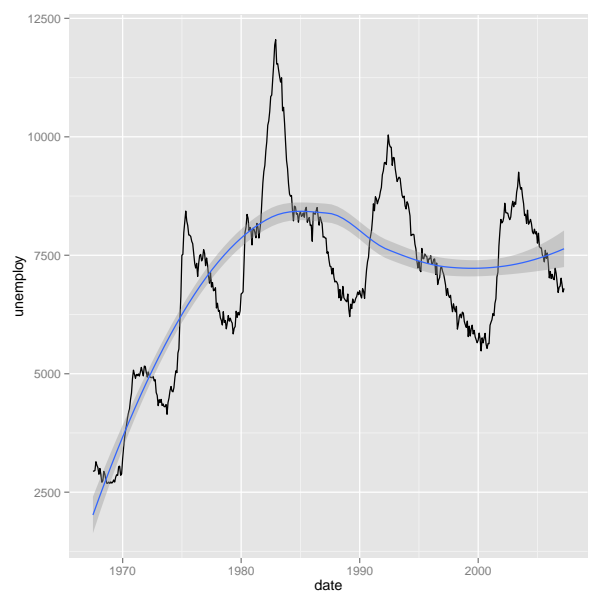
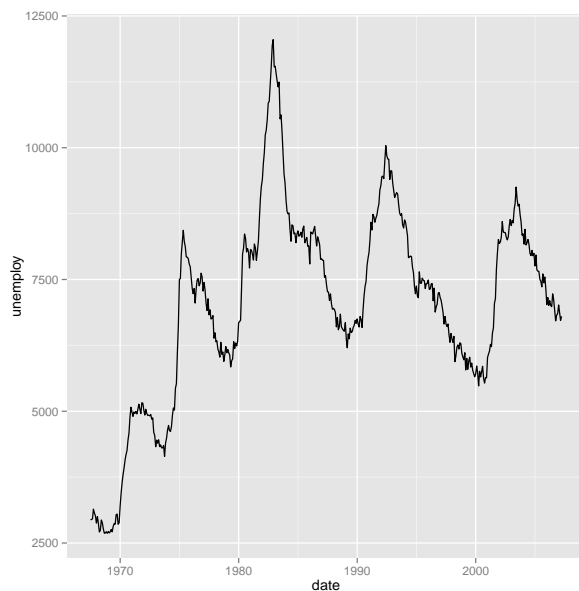
```
> scatter1 <- ggplot(data = economics) + geom_line(aes(x = date, y = unemploy))  
> scatter1
```

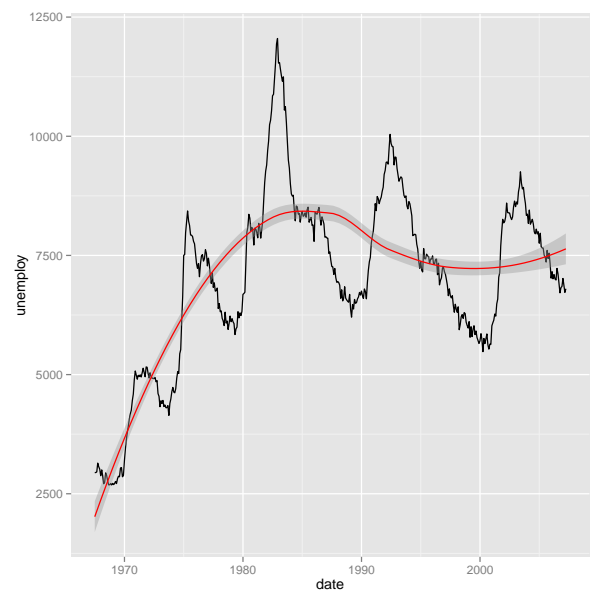
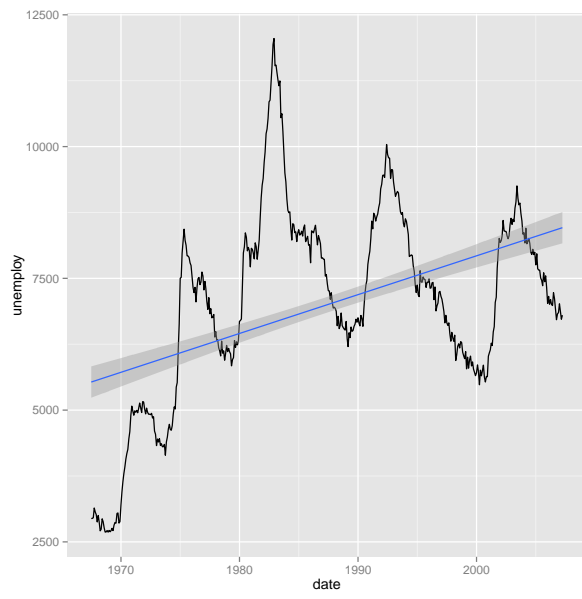
```
> scatter2 <- scatter1 + geom_smooth(aes(x = date, y = unemploy))
```

```
> scatter1 + geom_smooth(method = "lm", aes(x = date, y = unemploy))
```

```
> scatter1 + stat_smooth(level = 0.9, aes(x = date, y = unemploy), colour = "red")
```

```
> bestFit <- stat_smooth(method = "lm", se = F, colour = "red")
```





3 EXTENSION: Using Maps

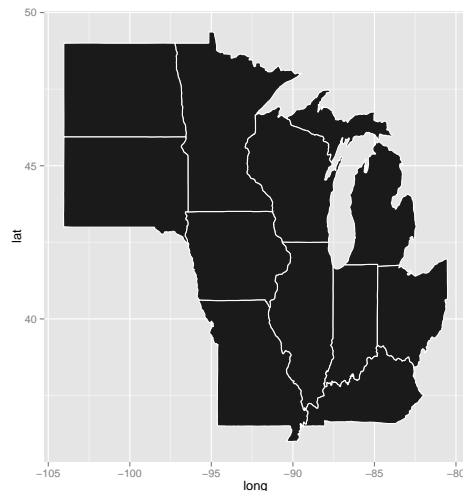
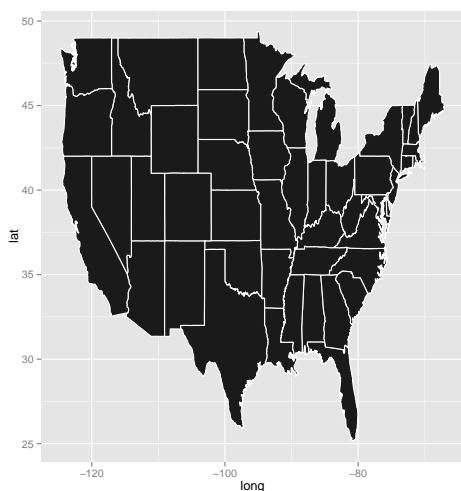
```
> library(ggplot2)
> library(maps)

> all_states <- map_data("state")

> p <- ggplot()
> p <- p + geom_polygon( data=all_states, aes(x=long, y=lat, group = group),
  colour="white", fill="grey10" )
> p

> states <- subset(all_states, region %in% c( "illinois", "indiana",
  "iowa", "kentucky", "michigan", "minnesota","missouri",
  "north dakota", "ohio", "south dakota", "wisconsin" ) )

> p <- ggplot()
> p <- p + geom_polygon( data=states, aes(x=long, y=lat, group = group),
  colour="white", fill="grey10" )
> p
```



```
> mydata <- read.csv("midwest_enrolment.csv", head = T)
> p <- ggplot()
> p <- p + geom_polygon( data=states, aes(x=long, y=lat, group = group),
  colour="white" )
> p <- p + geom_point( data=mydata, aes(x=long, y=lat), colour = "red" )
> p

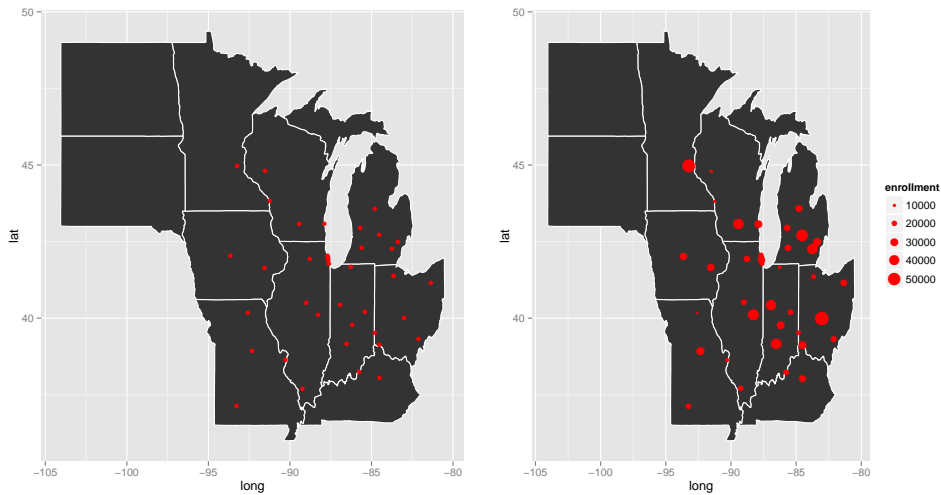
> p <- ggplot()
> p <- p + geom_polygon( data=states, aes(x=long, y=lat, group = group),
```



```

  colour="white" )
> p <- p + geom_point( data=mydata, aes(x=long, y=lat, size = enrollment
), colour = "red")
> p

```



```

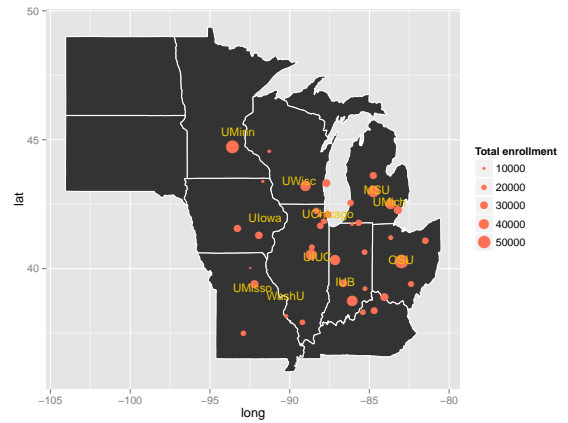
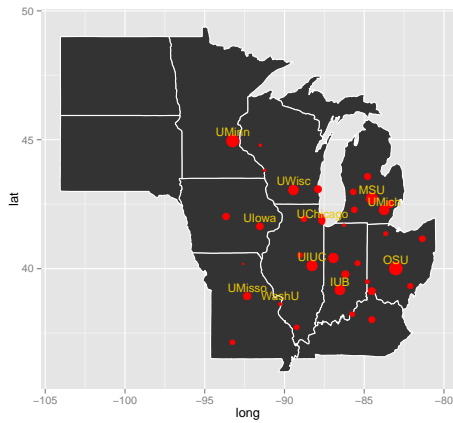
> p <- ggplot()
> p <- p + geom_polygon( data=states, aes(x=long, y=lat, group = group),
  colour="white" )
> p <- p + geom_point( data=mydata, aes(x=long, y=lat, size = enrollment
), colour = "red") + scale_size(name="Total enrollment")
> p <- p + geom_text( data=mydata, hjust=0.5, vjust=-0.5, ## offset
aes(x=long, y=lat, label=label), colour="gold2", size=4 )
> p

```

```

> p <- ggplot()
> p <- p + geom_polygon( data=states, aes(x=long, y=lat, group = group),
  colour="white" )
> p <- p + geom_jitter( data=mydata, position=position_jitter(width=0.5, height=0.5),
  aes(x=long, y=lat, size = enrollment), color="coral1") + scale_size(name="Total enrollment")
> p <- p + geom_text( data=mydata, hjust=0.5, vjust=-0.5,
  aes(x=long, y=lat, label=label), colour="gold2", size=4 )
> p

```



```

> p <- ggplot()
> p <- p + geom_polygon( data=states, aes(x=long, y=lat,
  group = group), colour="white" )
> p <- p + geom_jitter( data=mydata, position=position_jitter(
  width=0.5, height=0.5), aes(x=long, y=lat, size =
  enrollment, color=state)) +
  scale_size(name="Total enrollment")
> p <- p + geom_text( data=mydata, hjust=0.5, vjust=-0.5,
  aes(x=long, y=lat, label=label), colour=
  "gold2", size=4 )
> p

```

