

# Health Insurance Market Place

## Objective

Health Insurance Marketplace - dataset from Kaggle Explore health and dental plans data in the US Health Insurance Marketplace Do exploration data analysis on the following:- 1. How do plan rates and benefits vary across states? 2. How do plan benefits relate to plan rates? 3. How do plan rates vary by age? 4. How do plans vary across insurance network providers? Data Description This data was originally prepared and released by the Centers for Medicare & Medicaid Services (CMS).

## Library used

```
library(plyr)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:plyr':
##
##   arrange, count, desc, failwith, id, mutate, rename, summarise,
##   summarize

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

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

```
##
## # maps v3.1: updated 'world': all lakes moved to separate new #
## # 'lakes' database. Type '?world' or 'news(package="maps")'. #

##
## Attaching package: 'maps'

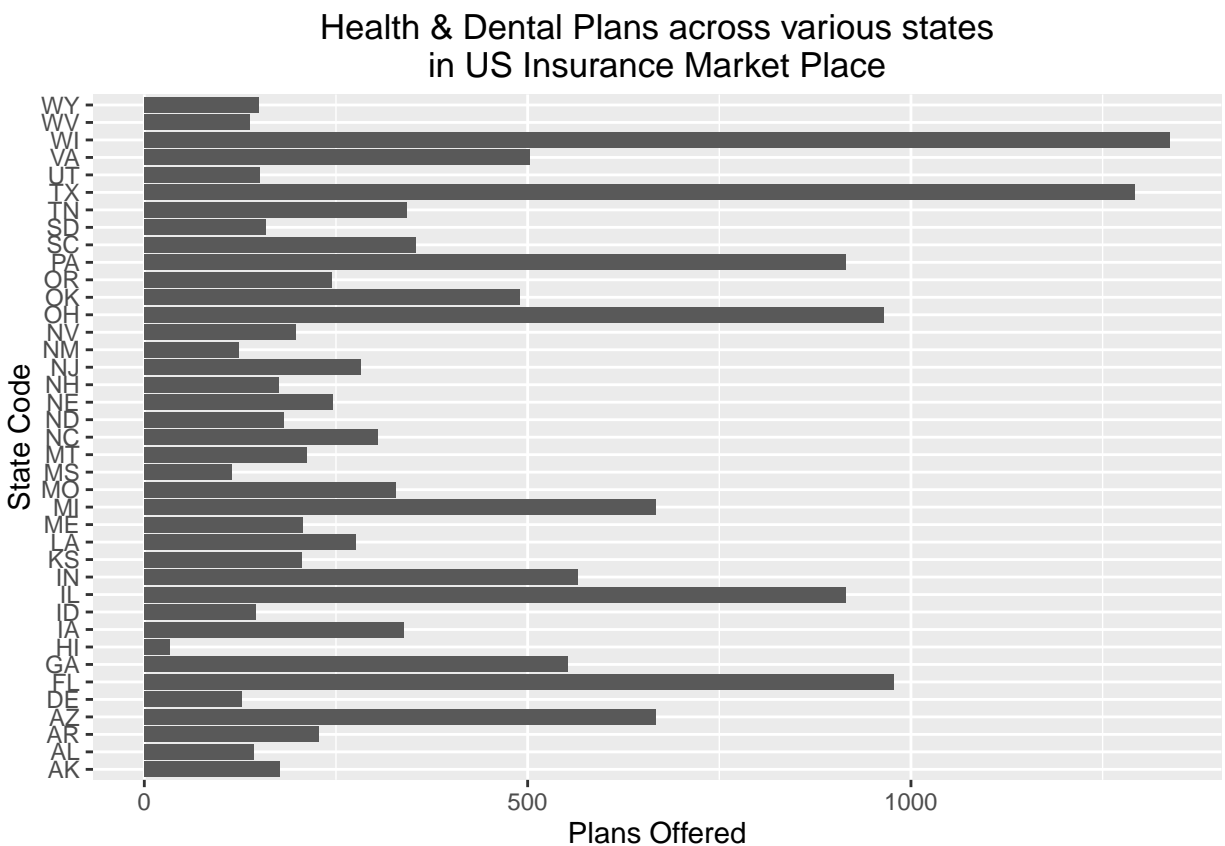
## The following object is masked from 'package:plyr':
##
##   ozone
```

```
library(reshape2)
```

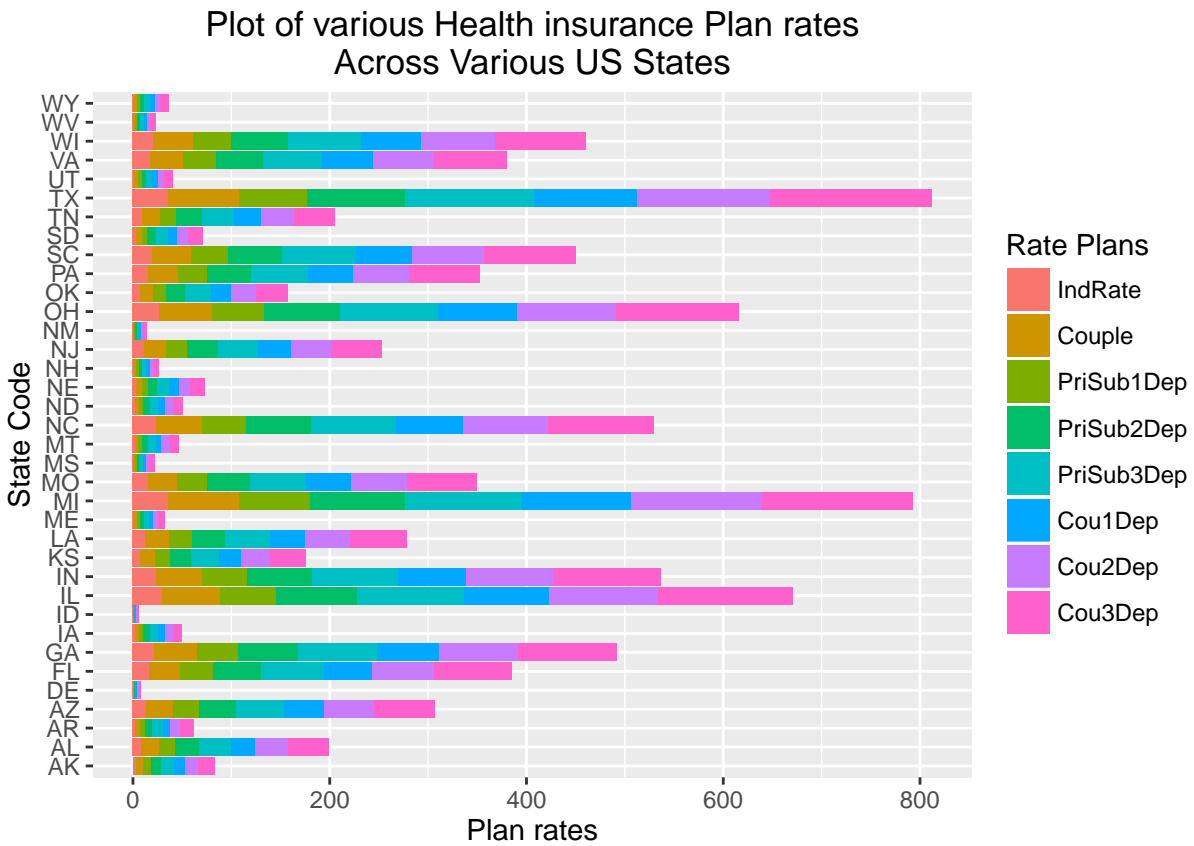
## Getting,reading and storing data

```
setwd("C:/Program Files/RStudio/kaggle/health-insurance-marketplace")
#dataBenefits <- read.csv("BenefitsCostSharing.csv", header = TRUE, stringsAsFactors = FALSE)
dataBusinessRules <- read.csv("BusinessRules.csv", header = TRUE, stringsAsFactors = FALSE)
dataNetwork <- read.csv("Network.csv", header = TRUE, stringsAsFactors = FALSE)
dataPlanAttrib <- read.csv("PlanAttributes.csv", header = TRUE, stringsAsFactors = FALSE)
#dataRate <- read.csv("Rate.csv", header = TRUE, stringsAsFactors = FALSE)
dataServiceArea <- read.csv("ServiceArea.csv", header = TRUE, stringsAsFactors = FALSE)
#save(dataBenefits, file = "dataBenefits.RData")
#save(dataRate, file = "dataRate.RData")
load("dataBenefits.RData")
load("dataRate.RData")
```

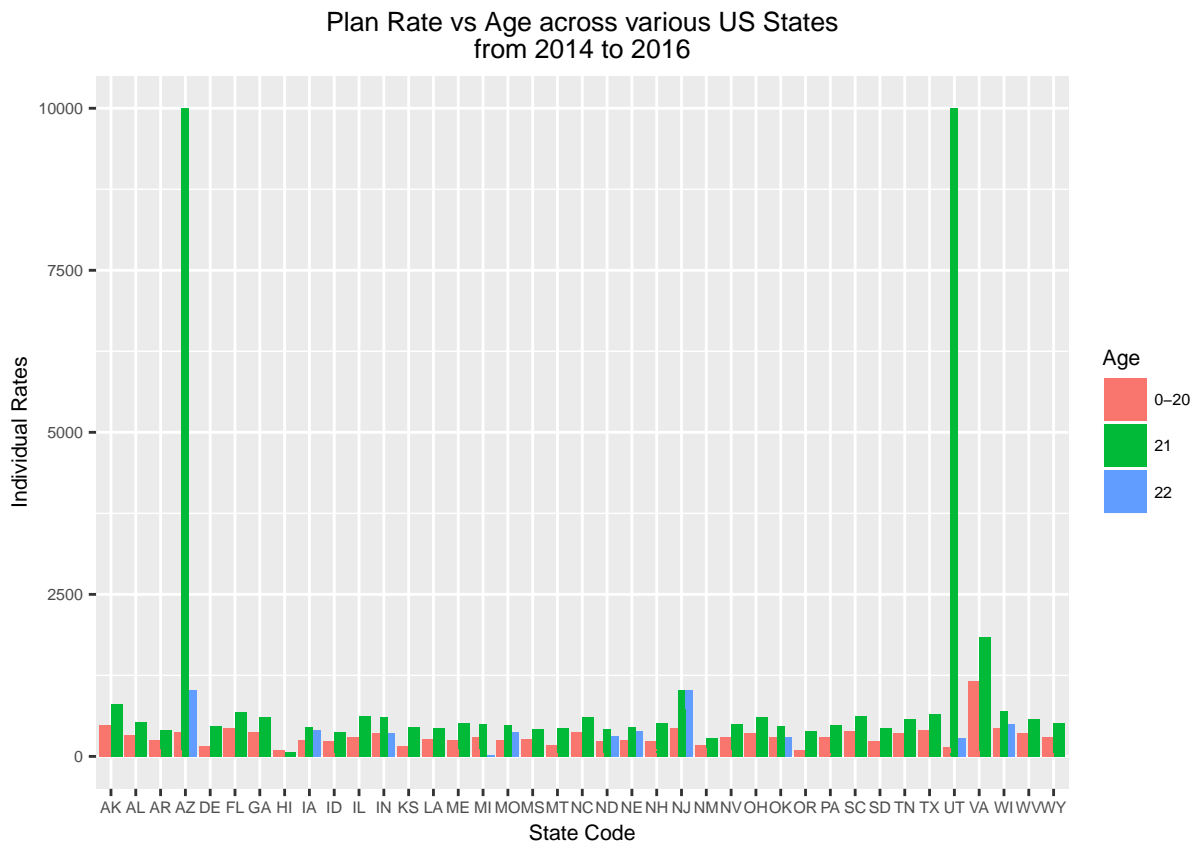
## Exploratory analysis to determine the plans offered across various US states

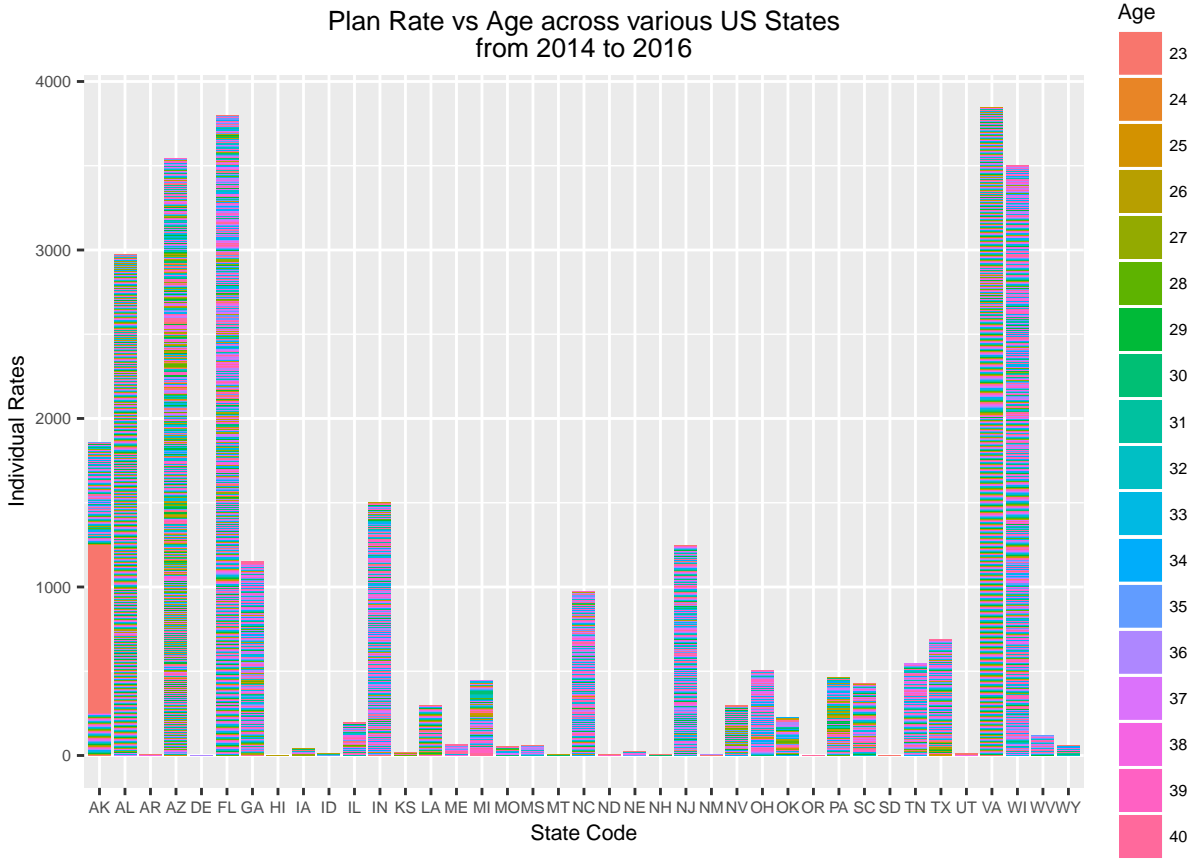


To analyse plan rates across various US states

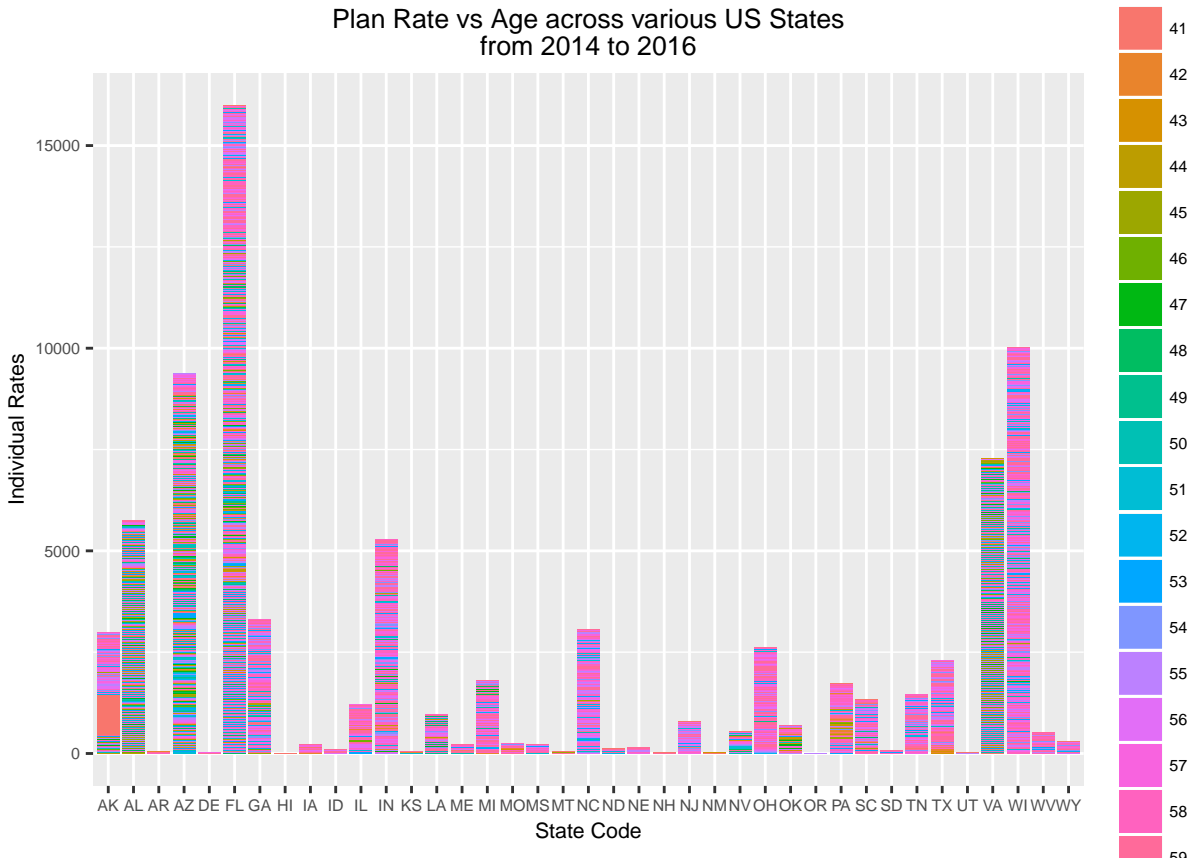


## Analyse Plan rate vs age

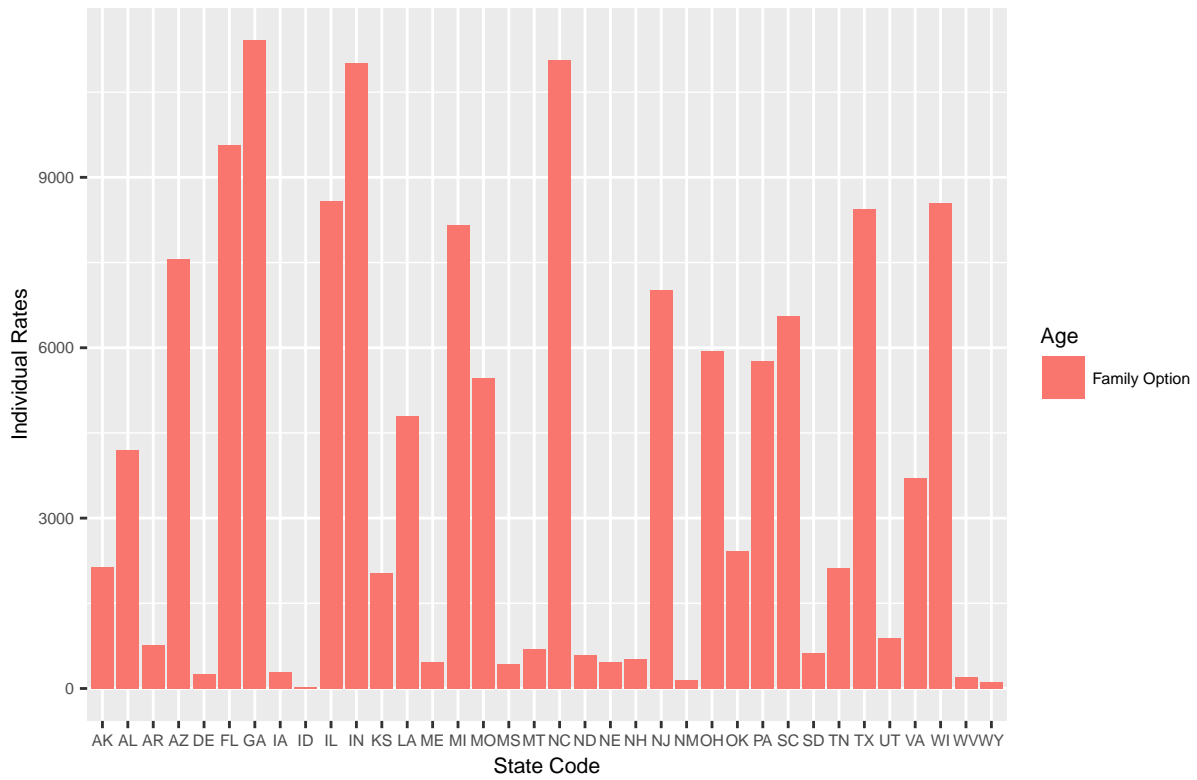




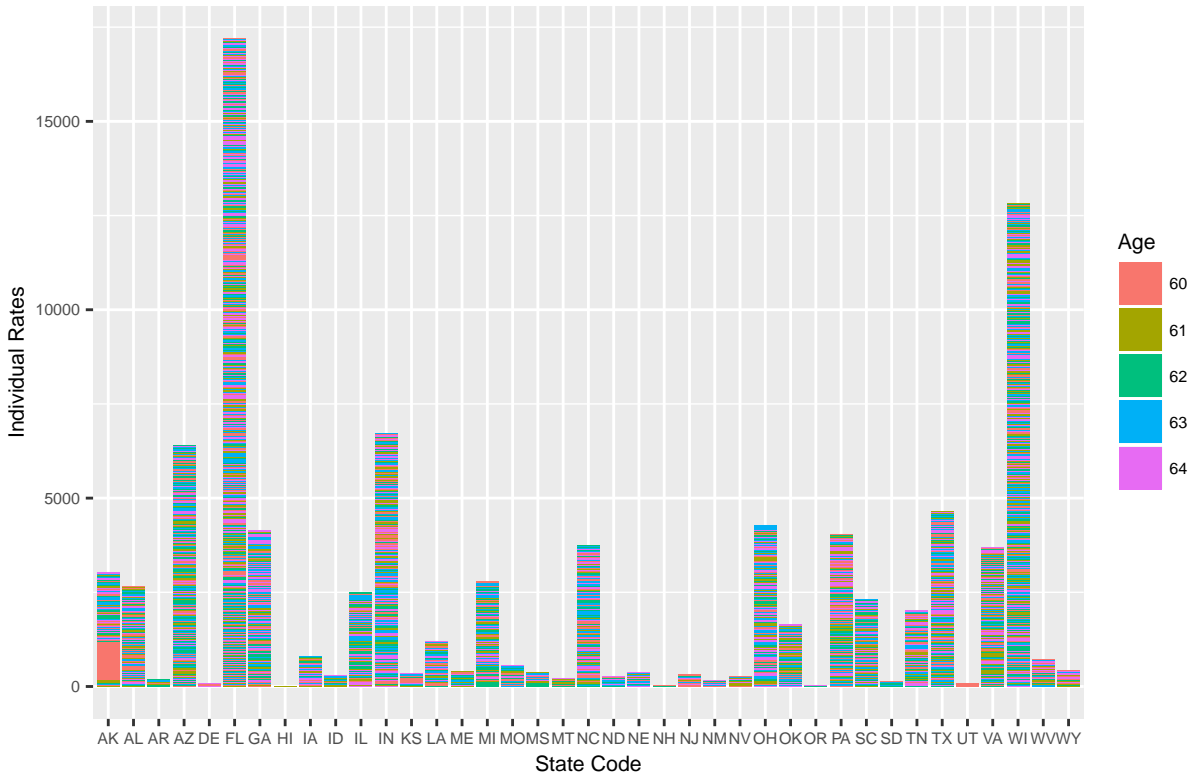
Plan Rate vs Age across various US States  
from 2014 to 2016



Plan Rate vs Age across various US States  
from 2014 to 2016

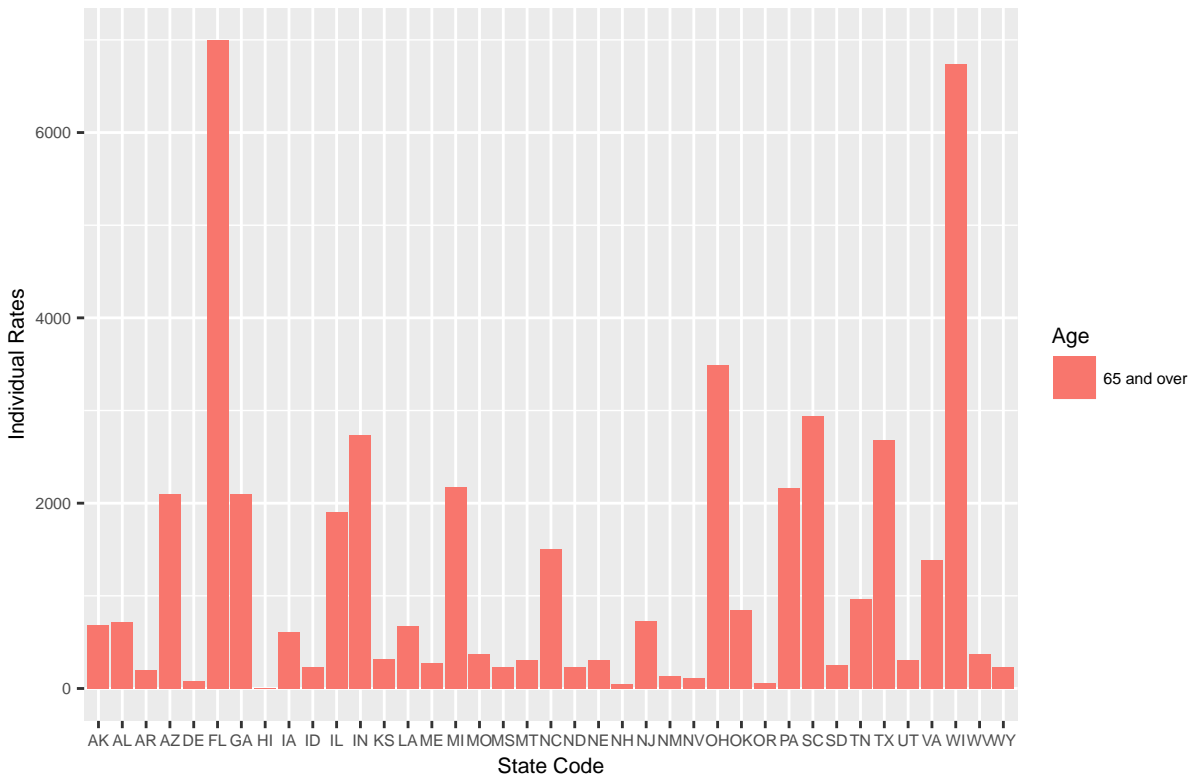


Plan Rate vs Age across various US States  
from 2014 to 2016





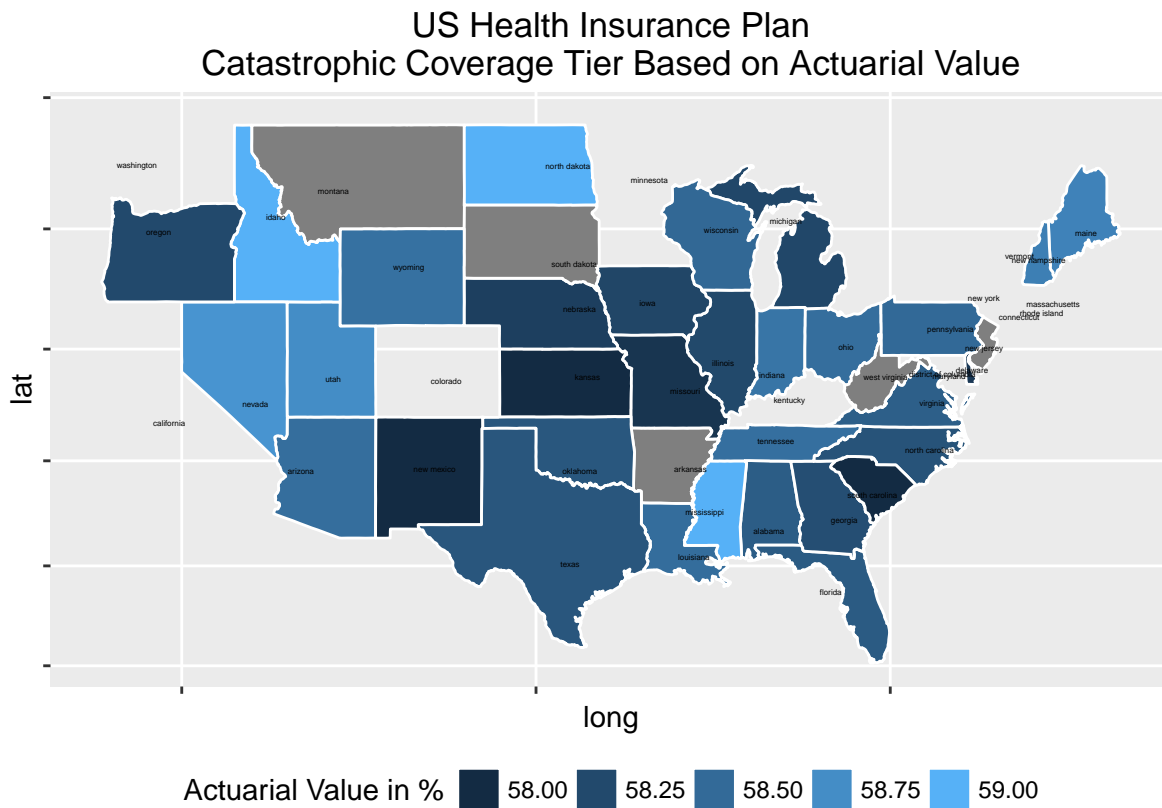
Plan Rate vs Age across various US States  
from 2014 to 2016



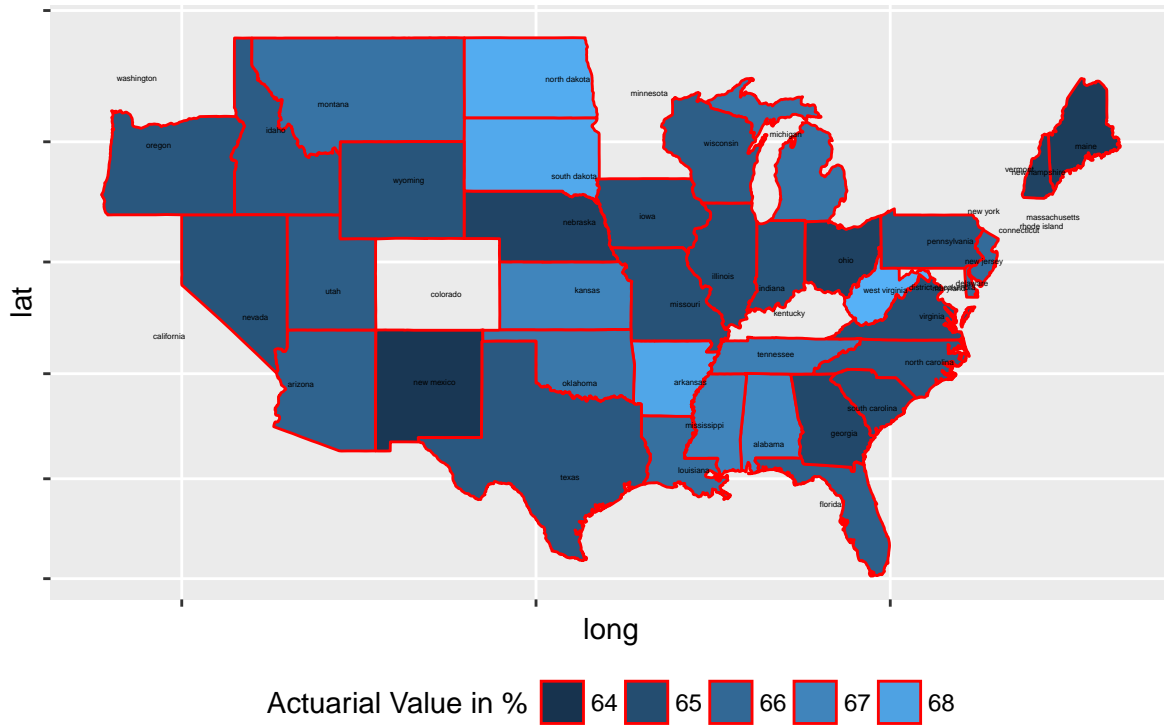
Categorise health plan sold to individuals and small group market into coverage tiers based on Issuer Actuarial value

Bronze - 60%, Silver - 70%, Gold - 80%, Platinum - 90%

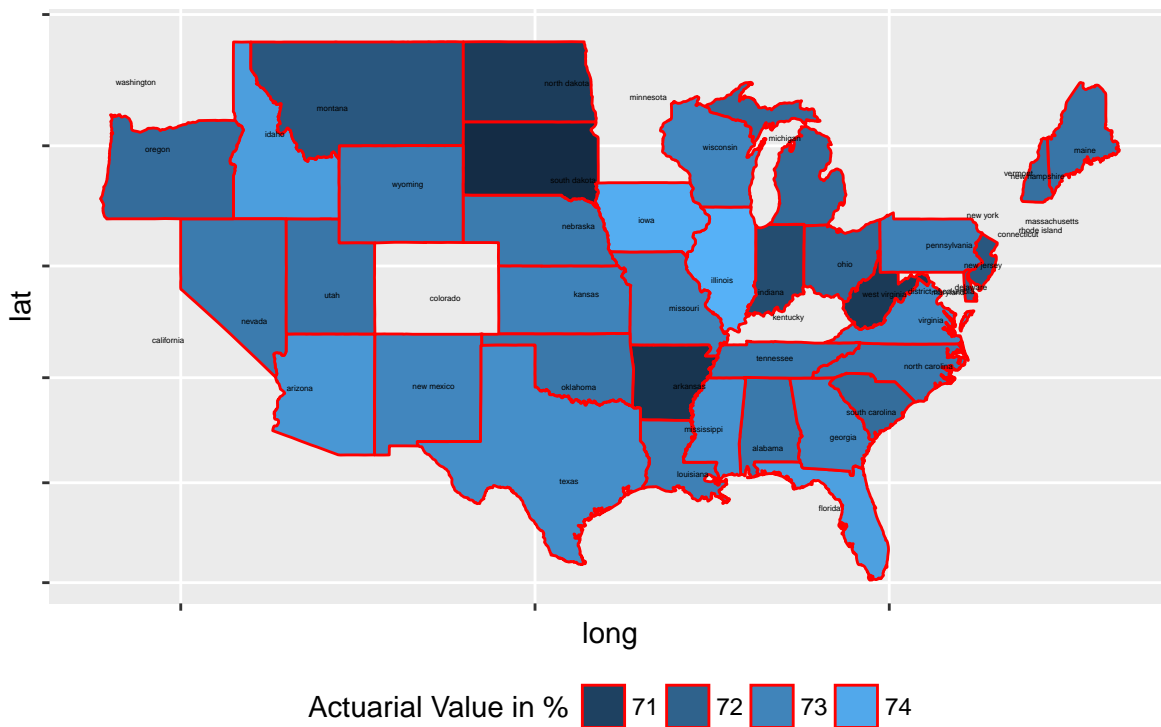
Catastrophic - below 60% sold to individuals



## US Health Insurance Plan Bronze Coverage Tier Based on Actuarial Value



# US Health Insurance Plan Silver Coverage Tier Based on Actuarial Value



lat

long

Actuarial Value in %

Actuarial Value in %	States
84.4	Montana, Wyoming, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, New Mexico, Texas
84.8	Washington, Oregon, Idaho, Nevada, Utah, Arizona, California, Colorado, Minnesota, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida, Louisiana, Arkansas, Missouri, Iowa, Wisconsin, Michigan, Ohio, Pennsylvania, New York, Massachusetts, Connecticut, Rhode Island, Vermont, New Hampshire, and Maine
85.2	Oregon, Nevada, Utah, Arizona, Colorado, Kansas, Missouri, Illinois, Indiana, Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida, Louisiana, Arkansas, Missouri, Iowa, Wisconsin, Michigan, Ohio, Pennsylvania, New York, Massachusetts, Connecticut, Rhode Island, Vermont, New Hampshire, and Maine
85.6	Washington, Oregon, Idaho, Nevada, Utah, Arizona, California, Colorado, Minnesota, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida, Louisiana, Arkansas, Missouri, Iowa, Wisconsin, Michigan, Ohio, Pennsylvania, New York, Massachusetts, Connecticut, Rhode Island, Vermont, New Hampshire, and Maine

lat

long

Actuarial Value in %

Actuarial Value in %	Color
97	Dark Blue
98	Medium Blue
99	Light Blue
100	Very Light Blue