Bhasin-S-hwk4-1

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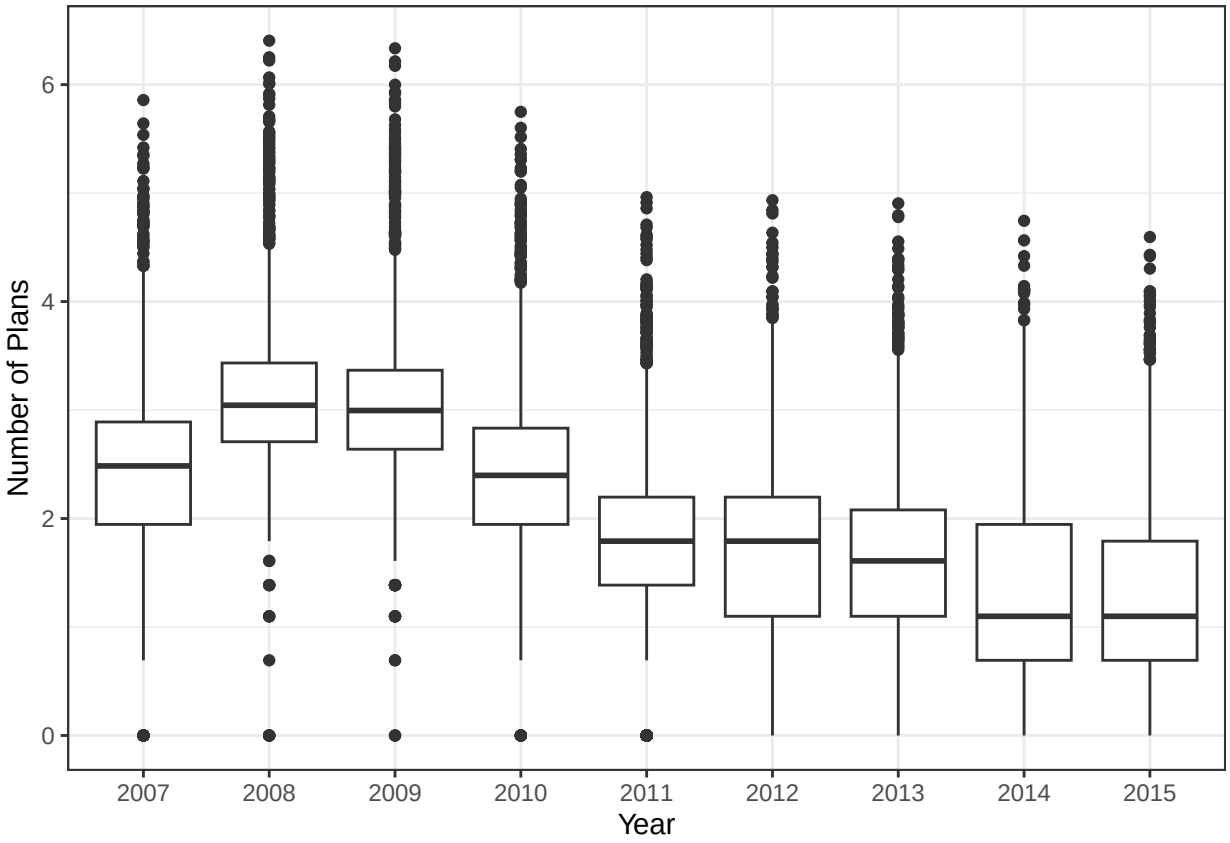
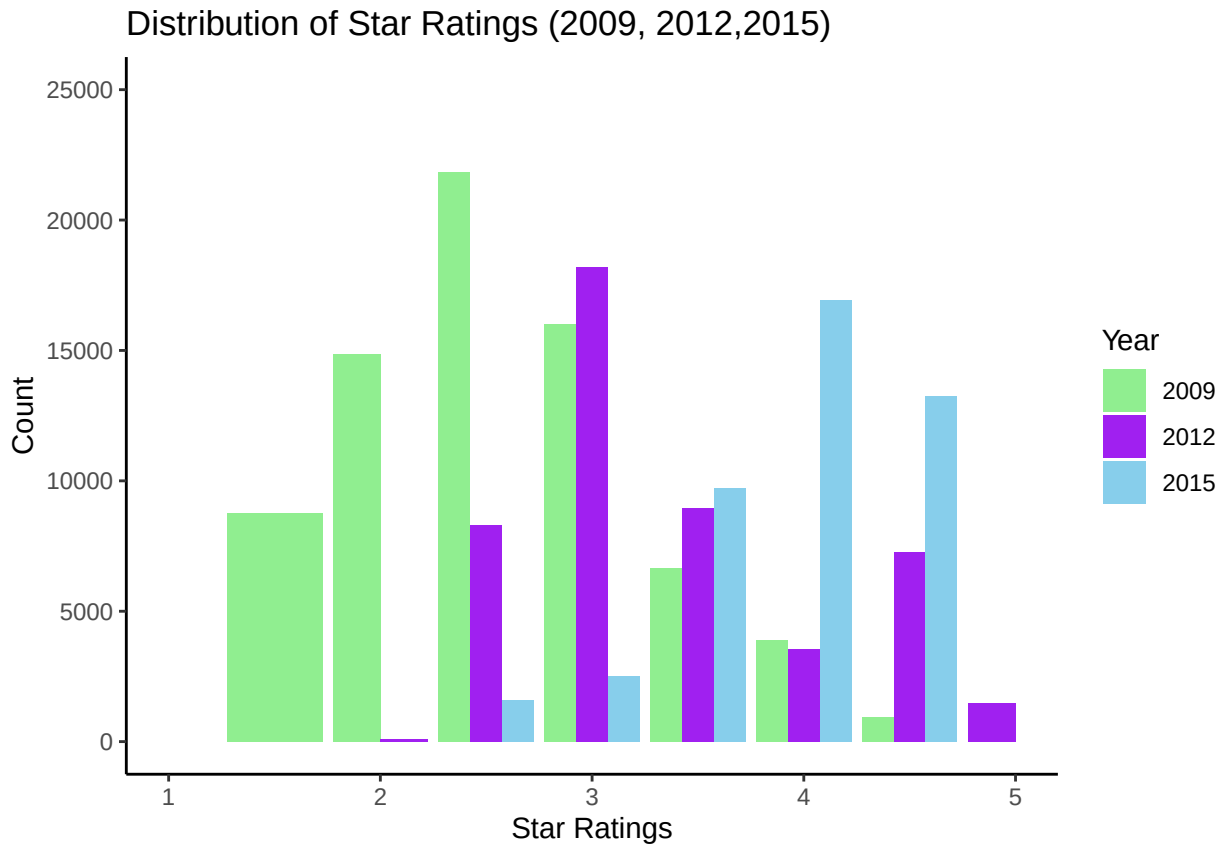
Question 1



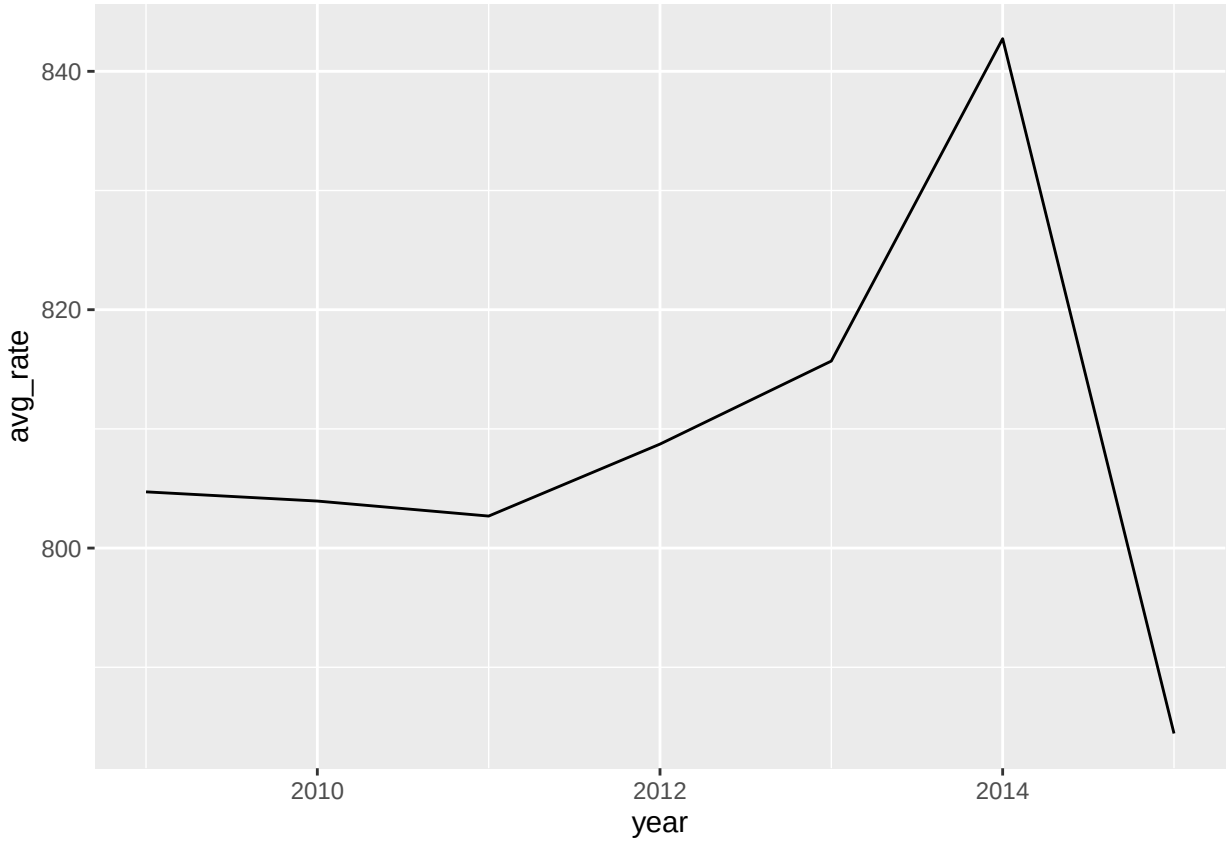
I think the number of plans is low for each country over time. Some counties only have 1 option, especially in the later years. Overtime, there has been a decrease in the number of plans per country. This may be because plans are merging within the insurance companies to have a higher quality rating.

Question 2



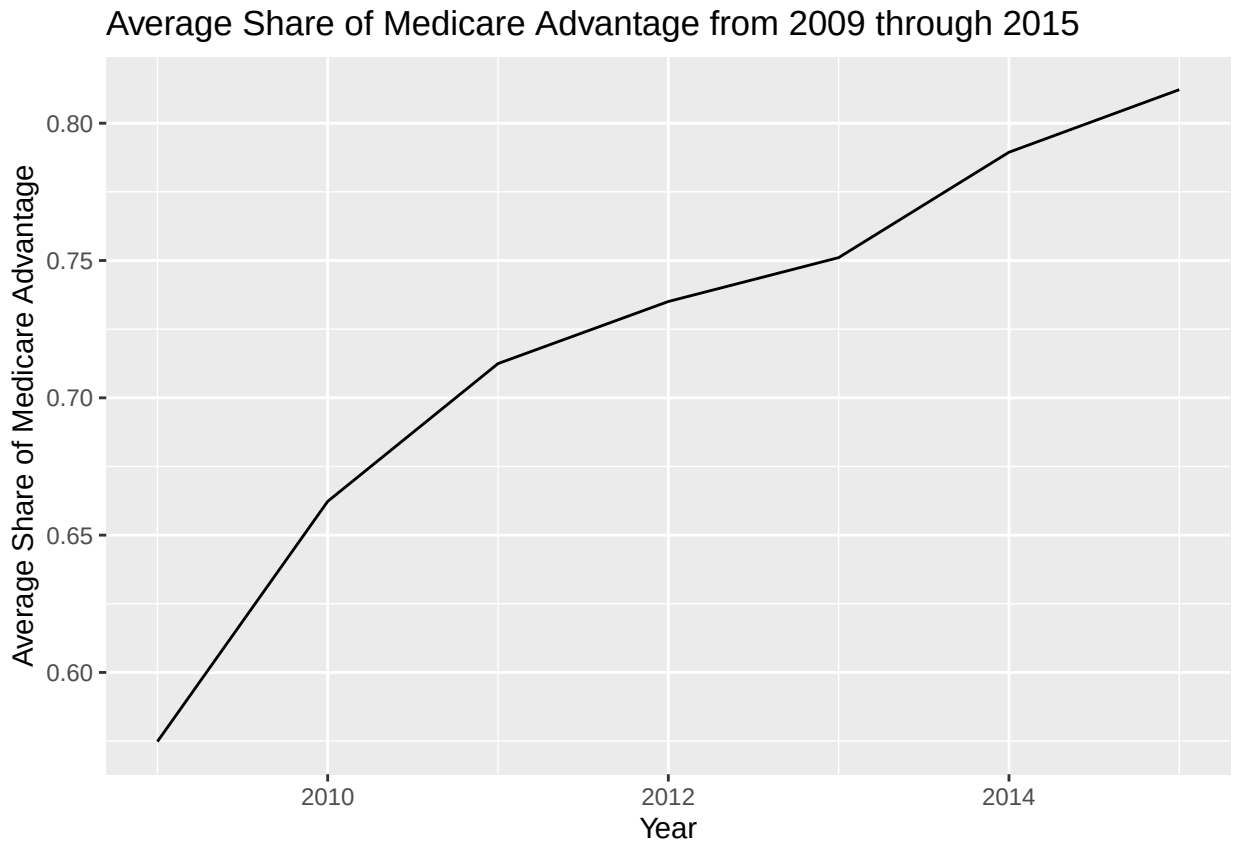
The star ratings have increased overtime. Especially after 2012, when the ACA was introduced, there has been a shift. The overall highest star ratings were seen in 2015, then 2012, and 2009 has the lowest overall star ratings.

Question 3



The average benchmark payment has risen by about 40 dollars from 2009 to 2015. It then drops from 2014 to 2015 by about 75 dollars.

Question 4



Medicare Advantage has increased in popularity over the years. This share correlates with benchmarks for the most part until 2014. From 2014 to 2014, the benchmark decreases but the average share of medicare advantage continues to increase.

Question 5

```
## # A tibble: 7 x 2
##   Star_Rating `mean(indicator)`
##         <dbl>             <dbl>
## 1         1.5          0.000685
## 2         2            0.0410
## 3         2.5          0.317
## 4         3            0.750
## 5         3.5          0.691
## 6         4            0.777
## 7         4.5          1
```

Question 6

```
## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
## Number of Obs.                11208         7778
## Eff. Number of Obs.             270         1683
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.125        0.125
## BW bias (b)                   0.125        0.125
## rho (h/b)                     1.000        1.000
##
## ================================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
## ================================================================================
##   Conventional     0.017     0.004     4.277     0.000     [0.009 , 0.025]
##         Robust         -         -     2.554     0.011     [0.007 , 0.052]
## ================================================================================

## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
## Number of Obs.                15331         3655
## Eff. Number of Obs.             914          664
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.125        0.125
## BW bias (b)                   0.125        0.125
## rho (h/b)                     1.000        1.000
##
## ================================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
## ================================================================================
##   Conventional     0.013     0.003     3.961     0.000     [0.006 , 0.019]
##         Robust         -         -     6.899     0.000     [0.021 , 0.037]
## ================================================================================

## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
```

```
## Number of Obs.                17640         1346
## Eff. Number of Obs.             646          640
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.125        0.125
## BW bias (b)                   0.125        0.125
## rho (h/b)                     1.000        1.000
##
## ===============================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
## ===============================================================================
##   Conventional    -0.003     0.002    -1.255     0.210    [-0.008 , 0.002]
##         Robust          -         -    -2.096     0.036    [-0.017 , -0.001]
## ===============================================================================
```

Question 7

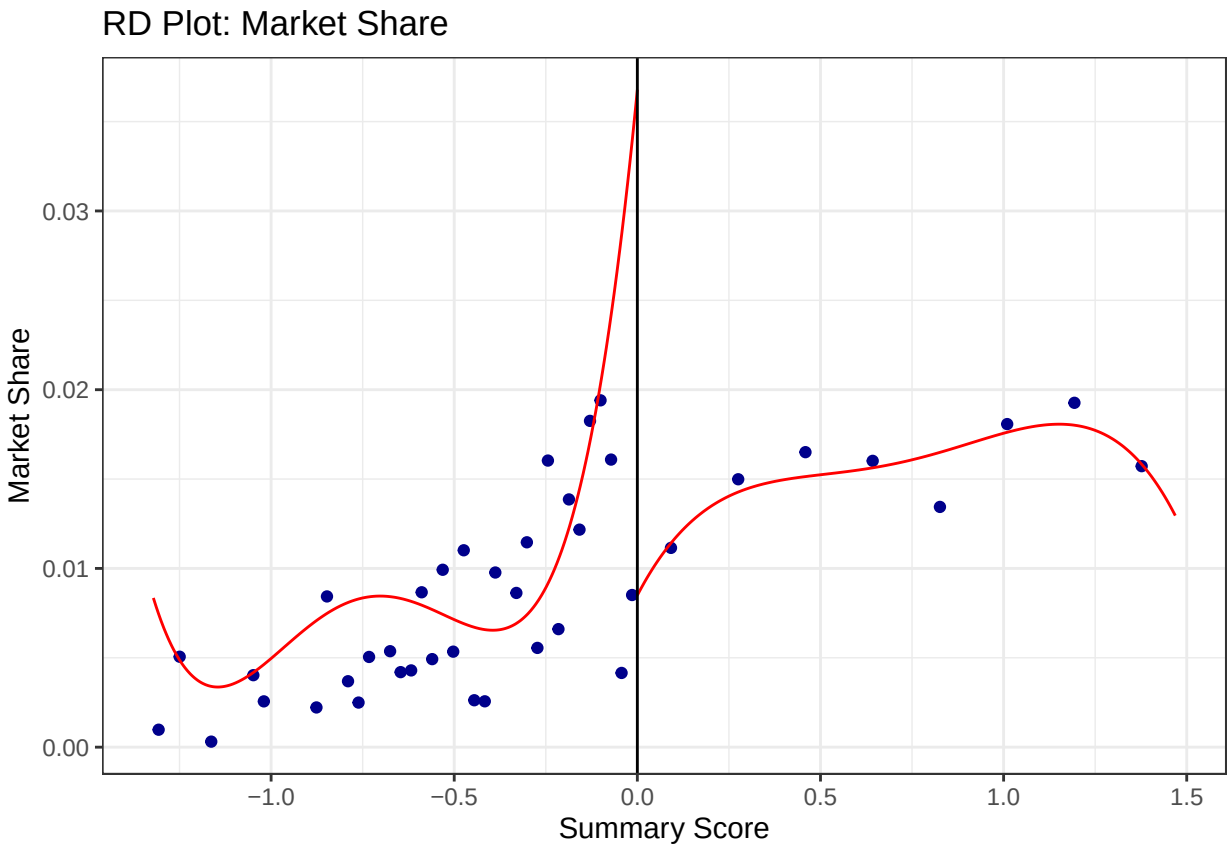
```
## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
## Number of Obs.                11208         7778
## Eff. Number of Obs.             181          522
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.100        0.100
## BW bias (b)                   0.100        0.100
## rho (h/b)                     1.000        1.000
##
## ================================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
## ================================================================================
##   Conventional     0.012     0.004     3.480     0.001     [0.005 , 0.019]
##         Robust         -         -     2.310     0.021     [0.006 , 0.079]
## ================================================================================

## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
## Number of Obs.                11208         7778
## Eff. Number of Obs.             260         1680
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.120        0.120
## BW bias (b)                   0.120        0.120
## rho (h/b)                     1.000        1.000
##
## ================================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
## ================================================================================
##   Conventional     0.020     0.004     4.738     0.000     [0.012 , 0.029]
##         Robust         -         -     0.786     0.432    [-0.017 , 0.040]
## ================================================================================

## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
```

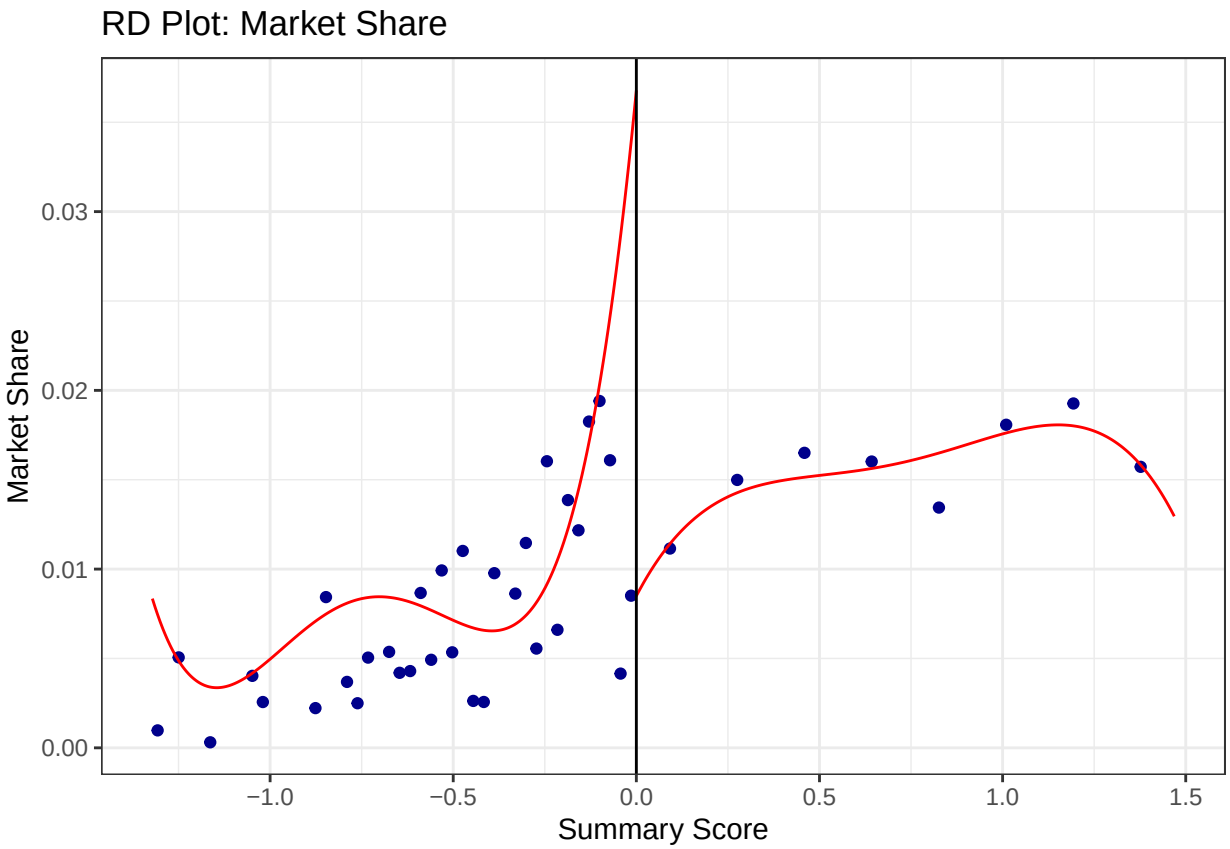
```
## Number of Obs.                11208         7778
## Eff. Number of Obs.             270         1683
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.130        0.130
## BW bias (b)                   0.130        0.130
## rho (h/b)                     1.000        1.000
##
## ===============================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
## ===============================================================================
##   Conventional     0.017     0.004     4.277     0.000     [0.009 , 0.025]
##         Robust         -         -     2.554     0.011     [0.007 , 0.052]
## ===============================================================================

## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
## Number of Obs.                11208         7778
## Eff. Number of Obs.            3966         1916
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.140        0.140
## BW bias (b)                   0.140        0.140
## rho (h/b)                     1.000        1.000
##
## ===============================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
## ===============================================================================
##   Conventional     0.008     0.003     2.882     0.004     [0.003 , 0.013]
##         Robust         -         -     3.907     0.000     [0.019 , 0.056]
## ===============================================================================

## Sharp RD estimates using local polynomial regression.
##
## Number of Obs.                18986
## BW type                      Manual
## Kernel                      Uniform
## VCE method                      HC0
##
## Number of Obs.                11208         7778
## Eff. Number of Obs.            3966         1993
## Order est. (p)                    1            1
## Order bias  (q)                   2            2
## BW est. (h)                   0.150        0.150
## BW bias (b)                   0.150        0.150
## rho (h/b)                     1.000        1.000
##
## ===============================================================================
##         Method     Coef. Std. Err.         z     P>|z|      [ 95% C.I. ]
```

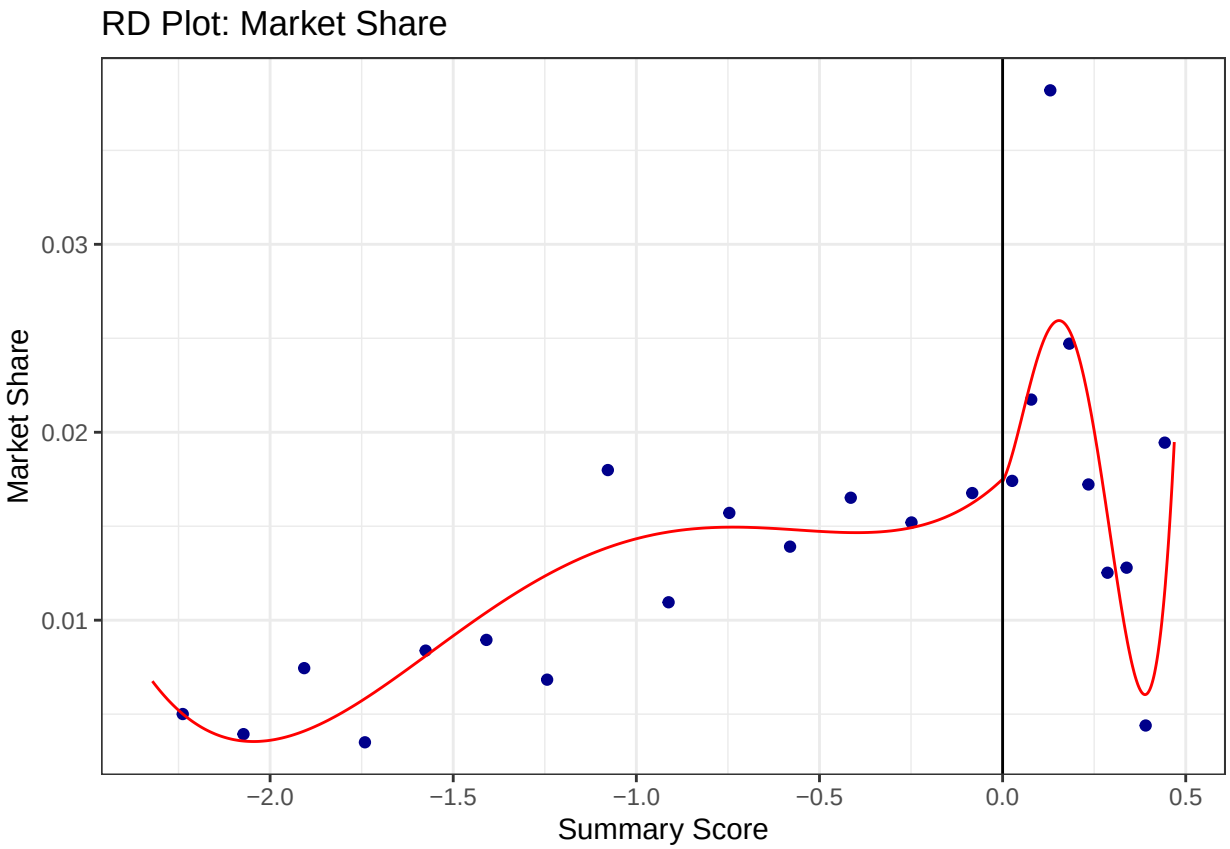
```
## ================================================================================
##   Conventional     0.009     0.003     3.334     0.001     [0.004 , 0.014]
##         Robust         -         -     3.762     0.000     [0.017 , 0.054]
## ================================================================================
```

As the bandwidth increases, the sensitivity decreases. Thus, a smaller bandwidth is more sensitive and more representative.

Question 8


RD Plot: Market Share
Market Share
0.03
0.02
0.01
0.00
−1.0
−0.5
0.0
0.5
1.0
1.5
Summary Score


RD Plot: Market Share
Market Share
0.03
0.02
0.01
0.00
−1.0
−0.5
0.0
0.5
1.0
1.5
Summary Score



As the bandwidth increases, the ratings become less significant. There is a wider range so the rating does not reflect as strongly the quality of the program.

Question 9

```
## # A tibble: 2 x 2
##   above prop_partd
##   <dbl>      <dbl>
## 1     0      0.981
## 2     1      0.568
```

Question 10

Increasing star rating increases enrollments. This can be seen by the fact that the plans with a higher star rating had a higher number of enrollees, despite not having a drastic difference in quality. There is a bigger impact when the star ratings are on the lower end compared to when the star ratings are on the higher end. For exmaple, people are more likely to choose a 2.5 over a 2 rating versus a 4.5 over a 4 rating.