Cancer EDA Lina + Duda

Setup

First, we load the car library, which gives us a convenient scatterplotMatrix function.

```
library(car)
```

```
## Loading required package: carData
```

```
# Load the data
cancer.df=read.csv("cancer.csv")
```

Data Transformation

We're going to explore a set of variables that represent the levels of health insurance coverage for individual counties.There are three variables in the original dataset that are related to insurance:

Variable Name	Description
PctPrivateCoverage	Percentage of the population with private insurance coverage
PctPublicCoverage	Percentage of the population with public insurance coverage
PctEmpPrivCoverage	Percentage of the population with employer-sponsored private insurance coverage

For the purposes of our explanatory analysis, we would like to conduct a more comprehensive research on various types and levels of insurance coverage and their effects on the mortality rates, so it makes sense to define a few more variables that can be derived from the original dataset. For example, we would like to include data about the populations with no insurance coverage, as well as the observations where individuals have both private and public insurance. It can also be more revealing to treat the employer-sponsored coverage as a relative proportion of the private coverage rather than an absolute value.

Hence, let's introduce three new variables as follows:

Variable Name	Description
PctPNoCoverage	Percentage of the population with no insurance coverage
PctDoubleCoverage	Percentage of the population with both private and public insurance coverage
EmpSponsoredPct	Percentage of the private insurance sponsored by employers

We will now add these new variables to our original dataset:

```
nrow(cancer.df[(cancer.df$PctPublicCoverage + cancer.df$PctPrivateCoverage)>100,])
```

```
## [1] 1722
```

```
nrow(cancer.df[(cancer.df$PctPublicCoverage + cancer.df$PctPrivateCoverage)<100,])
```

```
## [1] 1313
```

```
cancer.df$PctDoubleCoverage=cancer.df$PctPublicCoverage + cancer.df$PctPrivateCoverage - 100
cancer.df$PctDoubleCoverage[cancer.df$PctDoubleCoverage < 0] = 0
summary(cancer.df$PctDoubleCoverage)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
```

```
##   0.000   0.000   1.300   3.203   5.800  31.700
```

```
cancer.df$PctNoCoverage = 100 - cancer.df$PctPublicCoverage - cancer.df$PctPrivateCoverage
cancer.df$PctNoCoverage[cancer.df$PctNoCoverage < 0] = 0
summary(cancer.df$PctNoCoverage)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   0.000   0.000   0.000   2.595   3.750  34.600
```

```
cancer.df$EmpSponsoredPct = cancer.df$PctEmpPrivCoverage / cancer.df$PctPrivateCoverage * 100
summary(cancer.df$EmpSponsoredPct)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   21.59   59.08   65.14   63.76   69.43   84.55
```

Univariate Analysis of Key Variables

Our key variables in this investigation will be deathRate (target variable) and several indpendent variables representing insurance coverage for counties' populations.

Cancer Mortality Rate (deathRate variable)

Let's start with the target variable and summarize it:

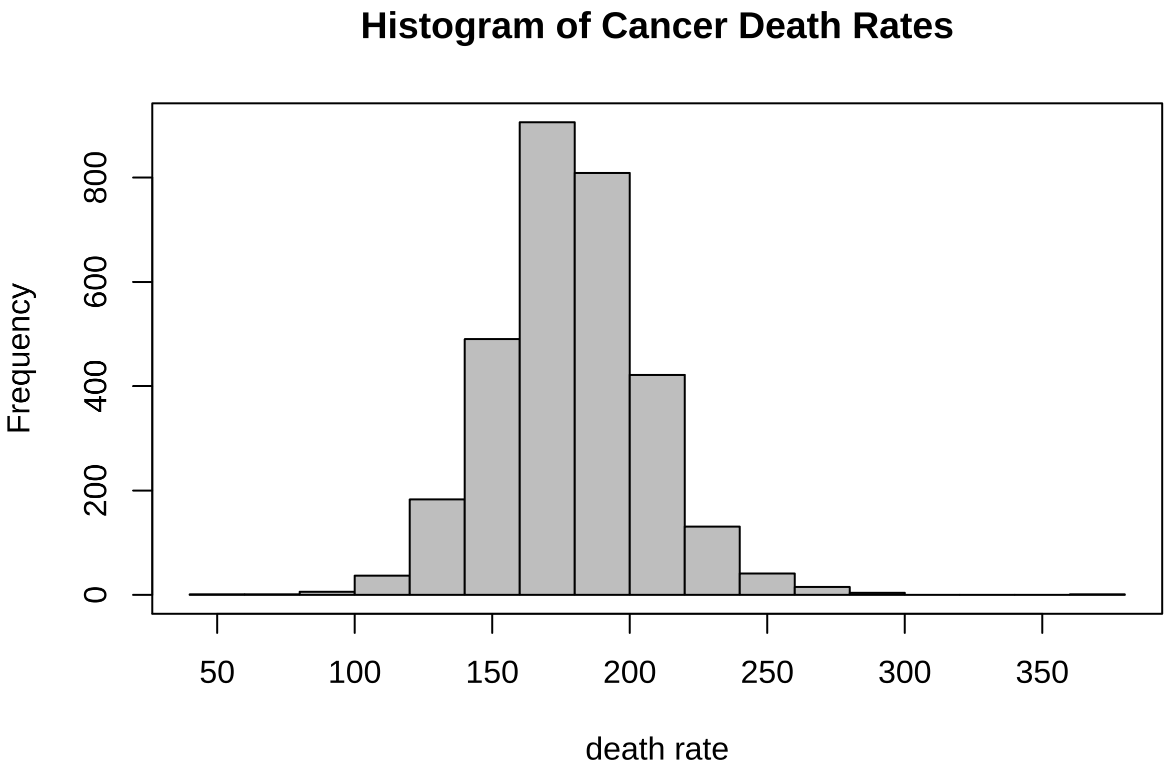
```
summary(cancer.df$deathRate)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    59.7   161.2   178.1   178.7   195.2   362.8
```

We see that this is a metric variable with its mean and median values very close to each other. There are no missing values and no obviously wrong or suspicious outliers.

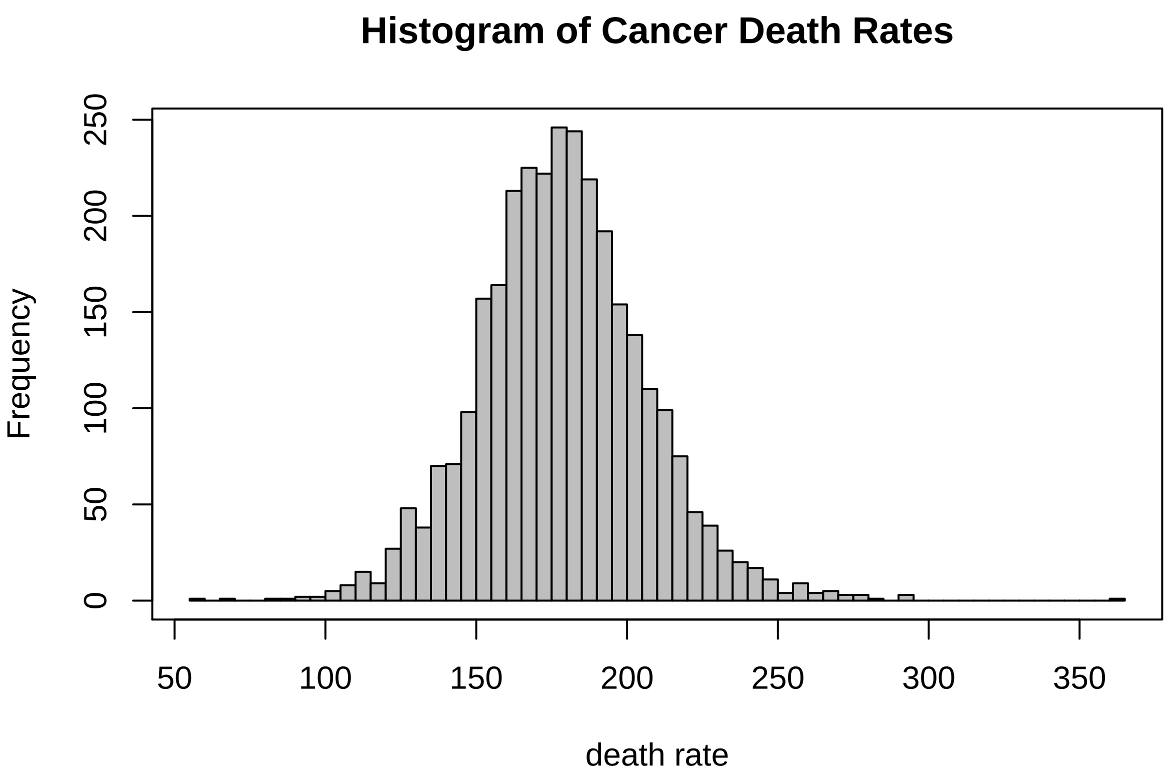
To better visualize the variable's values distribution, we plot the histogram.

```
with(cancer.df, hist(deathRate,  col = "gray",
                     main="Histogram of Cancer Death Rates",
                     xlab="death rate"))
box()
```



As we can see from the output, the default method for selecting the number of bins produced too few bins, which might obscure some interesting features in the data. A better result is achieved by setting the binning rule to the one proposed by Freedman and Diaconis. Fortunately, hist() function has a built-in option for this:

```
with(cancer.df, hist(deathRate,  breaks='FD', col = "gray",
                     main="Histogram of Cancer Death Rates",
                     xlab="death rate"))
box()
```



Now we have a much higher level of detail and can easily infer that deathRate variable distribution is very close to the normal one, with a notable outliers on the far right of the histogram.

Let's explore the extreme outliers with deathRate over 300 and see if we can find anything unusual in these observations. To find out how many outliers are there, we'll use the nrow() function:

```
nrow(cancer.df[cancer.df$deathRate > 300,])
```

```
## [1] 1
```

Turns out there's only one observation with this property, so let's examine it a bit closer.

```
str(cancer.df[cancer.df$deathRate > 300,])
```

```
## 'data.frame':    1 obs. of  33 variables:
##  $ X                     : int 1490
##  $ avgAnnCount           : num 214
##  $ medIncome             : int 40207
##  $ popEst2015            : int 15234
##  $ povertyPercent        : num 24.3
##  $ binnedInc             : Factor w/ 10 levels "(34218.1, 37413.8]",..: 2
##  $ MedianAge             : num 40.3
##  $ MedianAgeMale         : num 42.3
##  $ MedianAgeFemale       : num 36.9
##  $ Geography             : Factor w/ 3047 levels "Abbeville County, South Carolina",..: 2762
##  $ AvgHouseholdSize      : num 2.58
##  $ PercentMarried        : num 36.4
##  $ PctNoHS18_24          : num 27
##  $ PctHS18_24            : num 45.1
##  $ PctSomeCol18_24       : num NA
##  $ PctBachDeg18_24       : num 0
##  $ PctHS25_Over          : num 37.4
```

```
##  $ PctBachDeg25_Over   : num 5.5
##  $ PctEmployed16_Over  : num NA
##  $ PctUnemployed16_Over: num 11.7
##  $ PctPrivateCoverage  : num 59.6
##  $ PctEmpPrivCoverage  : num 41
##  $ PctPublicCoverage   : num 35.8
##  $ PctWhite            : num 74
##  $ PctBlack            : num 21.6
##  $ PctAsian            : num 0.645
##  $ PctOtherRace        : num 1.53
##  $ PctMarriedHouseholds: num 50
##  $ BirthRate           : num 3.74
##  $ deathRate           : num 363
##  $ PctDoubleCoverage   : num 0
##  $ PctNoCoverage       : num 4.6
##  $ EmpSponsoredPct     : num 68.8
```

At first sight, nothing in the rest of the data stands out to provide a possible explanation for the high mortality rate (363). We might want to revisit this observation once we completed the rest of the analysis.

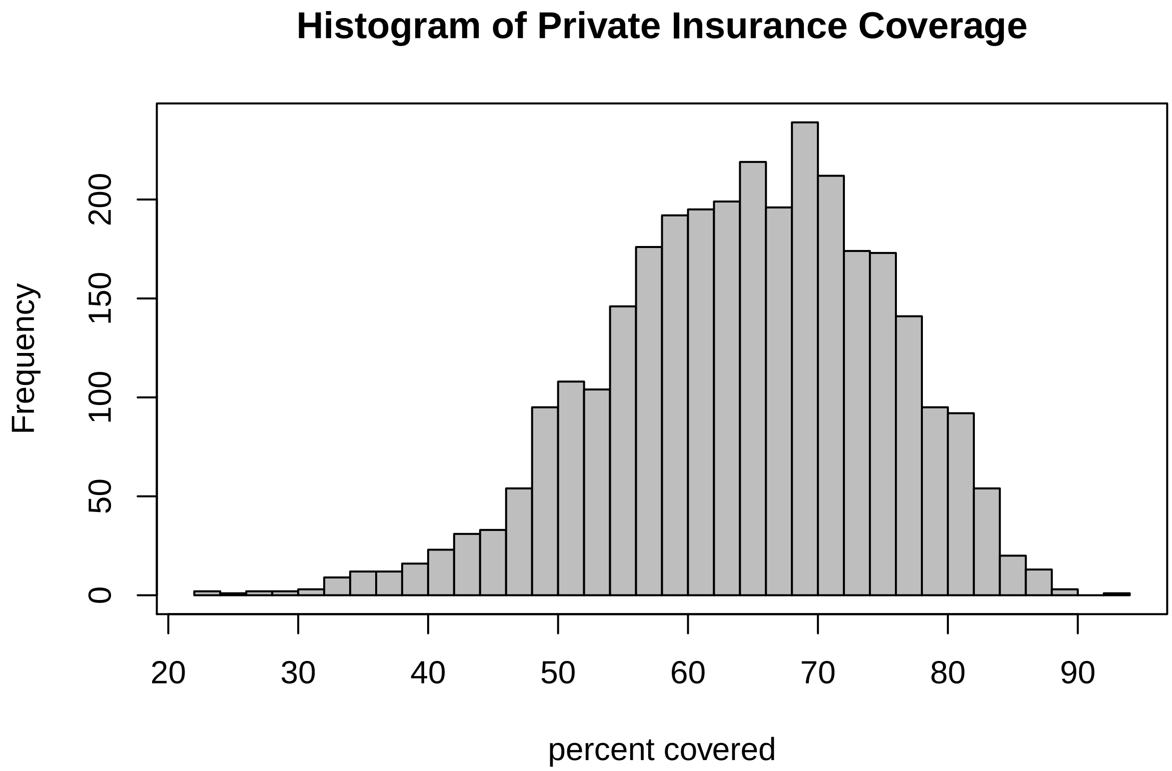
Private Insurance Coverage (PctPrivateCoverage variable)

Similar to our target variable, we summarize PctPrivateCoverage and generate its histogram:

```r
summary(cancer.df$PctPrivateCoverage)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max. 
##   22.30   57.20   65.10   64.35   72.10   92.30
```

```r
with(cancer.df, hist(PctPrivateCoverage, breaks="FD", col = "gray",
                     main="Histogram of Private Insurance Coverage",
                     xlab="percent covered"))
box()
```



We notice that the frequency distribution has some negative skew, with the majority of values falling between 55% and 75%. The data looks reasonable, with no obvious errors and missing values.

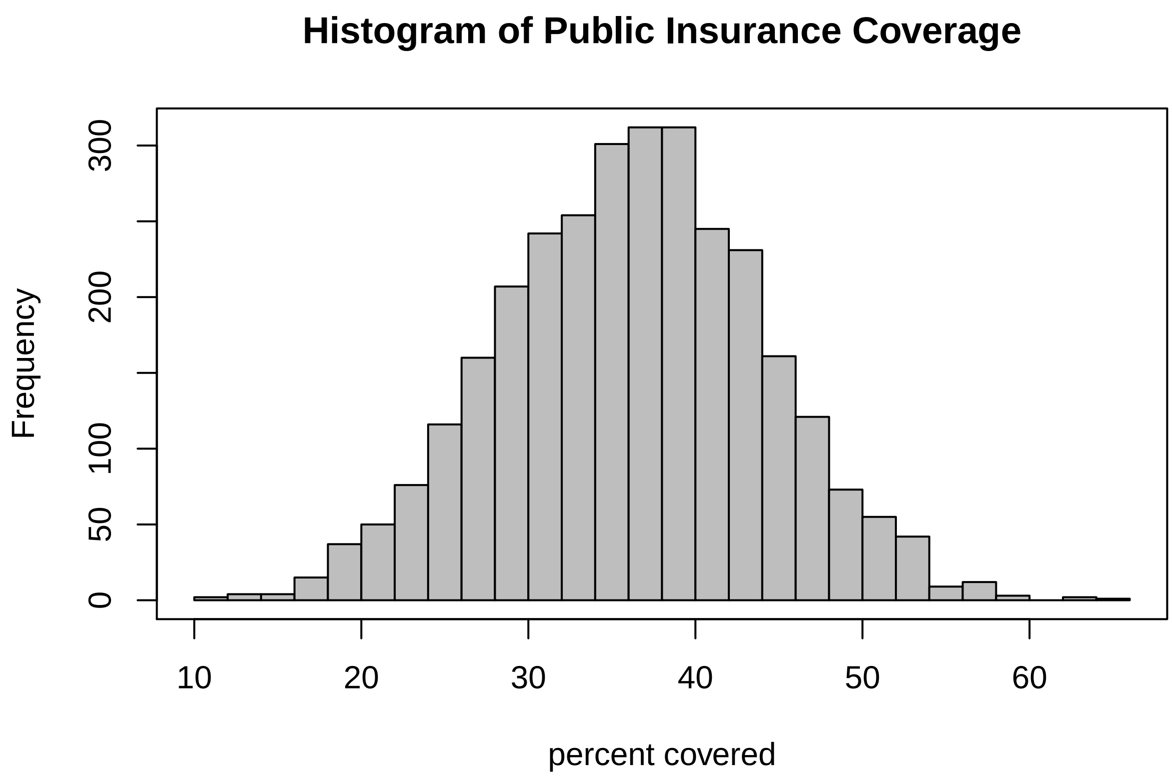
Public Insurance Coverage (PctPublicCoverage variable)

We repeat the steps executed above for the public insurance coverage:

```
summary(cancer.df$PctPublicCoverage)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   11.20   30.90   36.30   36.25   41.55   65.10
```

```
with(cancer.df, hist(PctPublicCoverage, breaks="FD", col = "gray",
                     main="Histogram of Public Insurance Coverage",
                     xlab = "percent covered"))
box()
```



Compared to the private insurance coverage, the data is more evenly distributed and is much closer to the normal curve. The mean and median values are almost half of the ones for the private insurance coverage. From that we can infer that the private insurance is much more prevalent than the one sponsored by the state. Similar to PctPrivateCoverage, the public coverage variables doesn't show any obvious errors and there are no missing values.

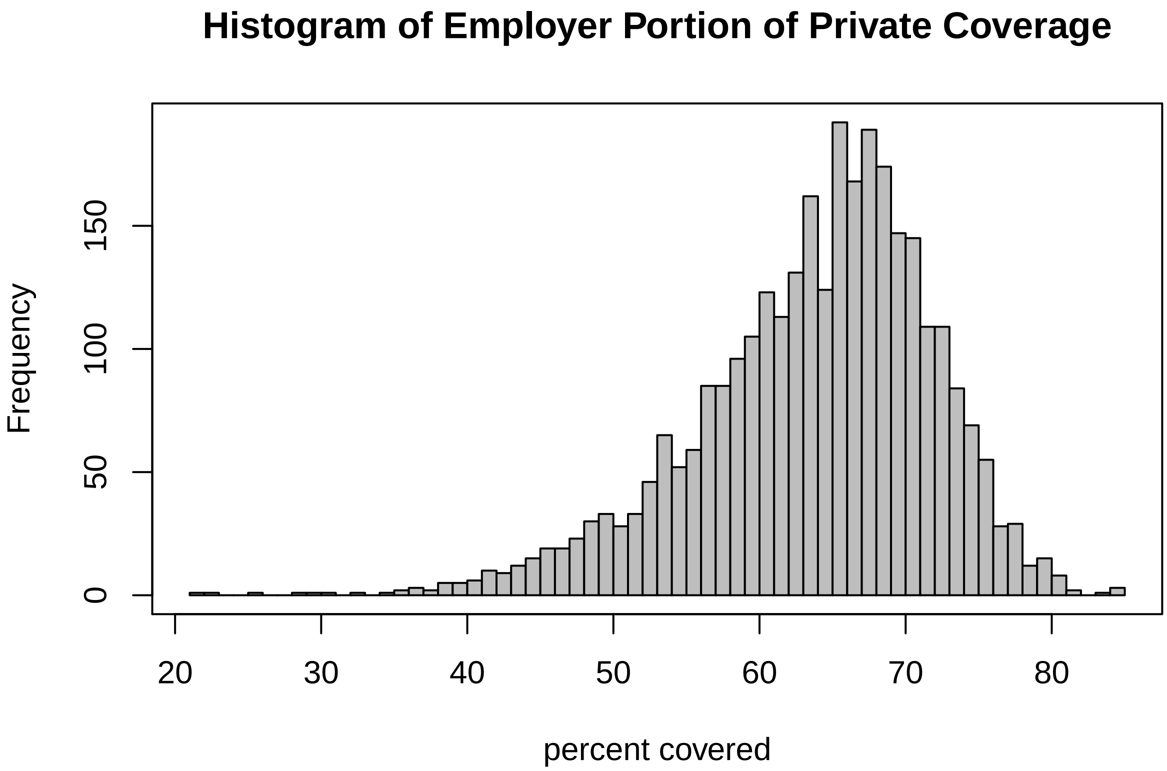
Employer-sponsored portion of the private coverage (EmpSponsoredPct variable)

After exploring the general category of the private coverage, we would like to examine what portion of the insurance are provided by employers:

```
summary(cancer.df$EmpSponsoredPct)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   21.59   59.08   65.14   63.76   69.43   84.55
```

```
with(cancer.df, hist(EmpSponsoredPct, breaks="FD", col = "gray",
                     main="Histogram of Employer Portion of Private Coverage",
                     xlab = "percent covered"))
box()
```



The histogram tells us that employment is the major source of private insurance coverage in the counties: most of the values of EmpSponsoredPct variable fall between 60% and 70%.

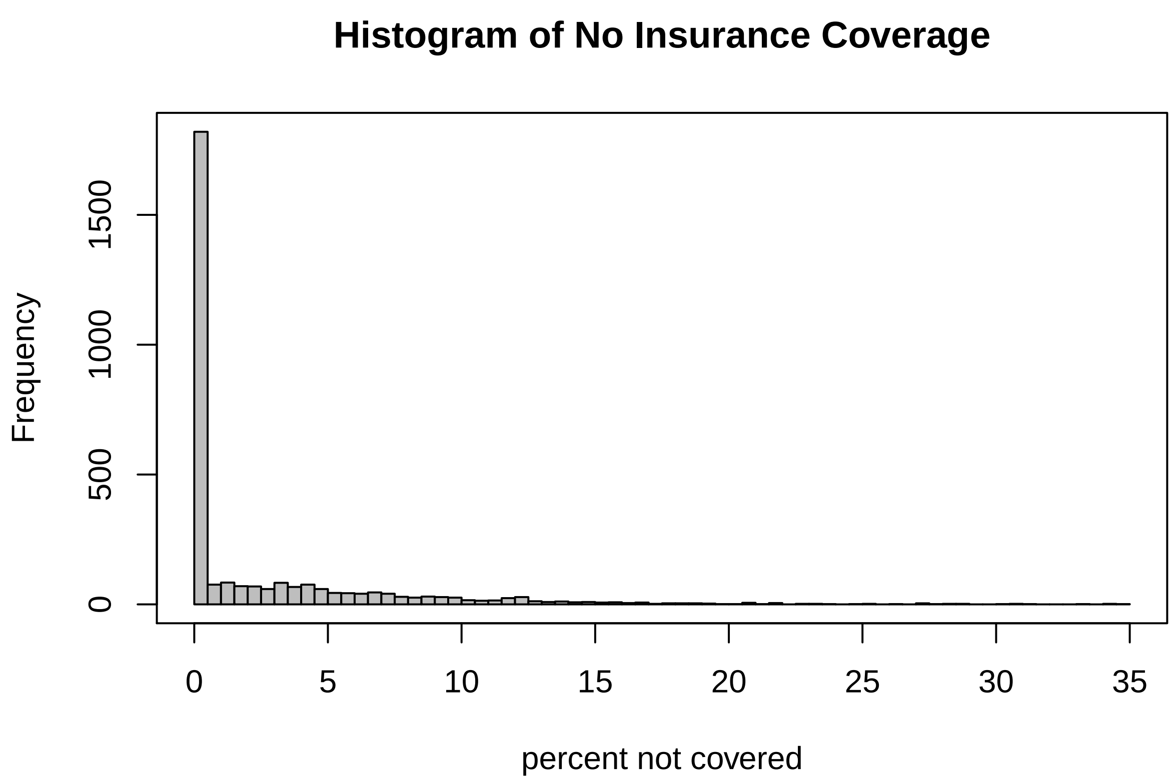
No insurance coverage (PctNoCoverage variable)

Let's summarize our generated variable that represents percentage of the population with no insurance coverage:

```
summary(cancer.df$PctNoCoverage)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   0.000   0.000   0.000   2.595   3.750  34.600
```

```
with(cancer.df, hist(PctNoCoverage, breaks="FD", col = "gray",
                     main="Histogram of No Insurance Coverage",
                     xlab = "percent not covered"))
box()
```



Unlike the distributions we've seen so far, this variable has a major peak around 0, with the rest of the values tapering off in the shape of the long-tailed distribution. To get a better insight into the variable, we can generate the percentile metric:

```
quantile(cancer.df$PctNoCoverage, prob = seq(0, 1, length = 11), type = 5)
```

```
##   0%  10%  20%  30%  40%  50%  60%  70%  80%  90% 100%
##  0.0  0.0  0.0  0.0  0.0  0.0  0.6  2.7  4.9  8.7 34.6
```

The result shows that 80% of the observations have less than 5% of the population with no health insurance. We can safely infer then that the effect of this variable on the target will be minimal.

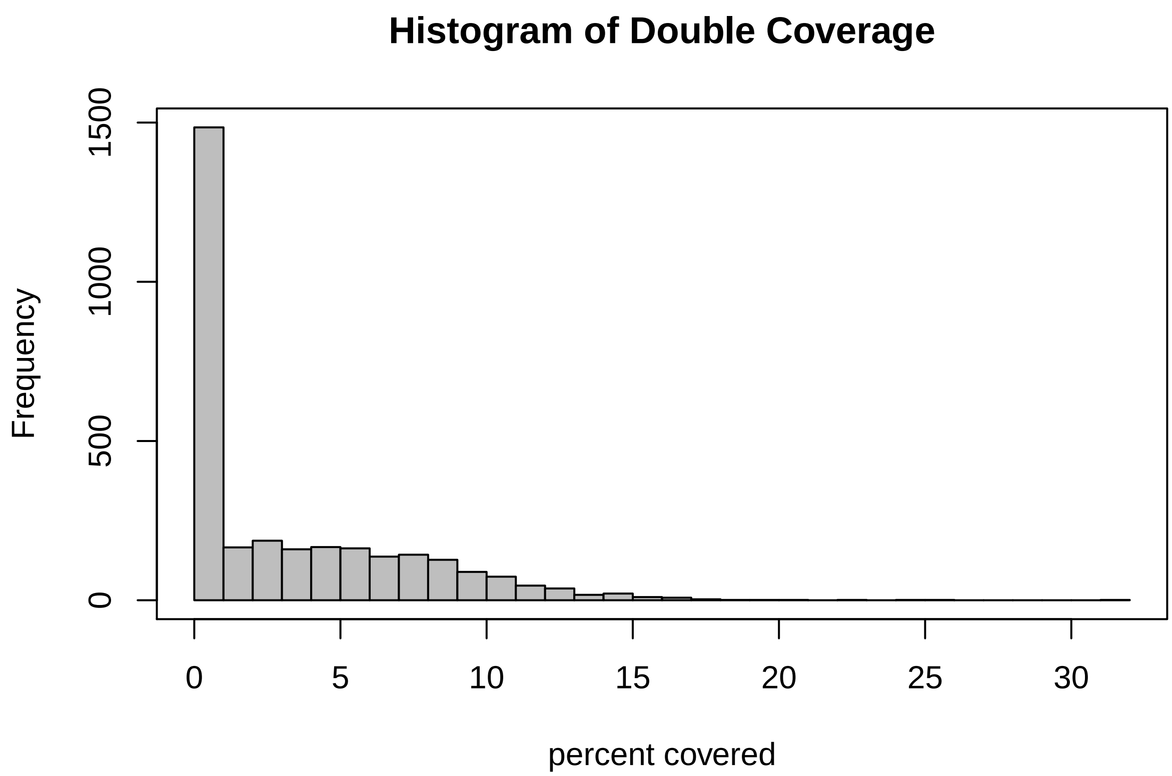
Coverage that includes both private and public components (PctDoubleCoverage variable)

We repeat the steps executed during the evaluation of PctNoCoverage variable:

```
summary(cancer.df$PctDoubleCoverage)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   0.000   0.000   1.300   3.203   5.800  31.700
```

```
with(cancer.df, hist(PctDoubleCoverage, breaks="FD", col = "gray",
                     main="Histogram of Double Coverage",
                     xlab = "percent covered"))
box()
```




```
quantile(cancer.df$PctDoubleCoverage, prob = seq(0, 1, length = 11), type = 5)
```

```
##   0%  10%  20%  30%  40%  50%  60%  70%  80%  90% 100%
##  0.0  0.0  0.0  0.0  0.0  1.3  3.0  4.8  6.9  9.1 31.7
```

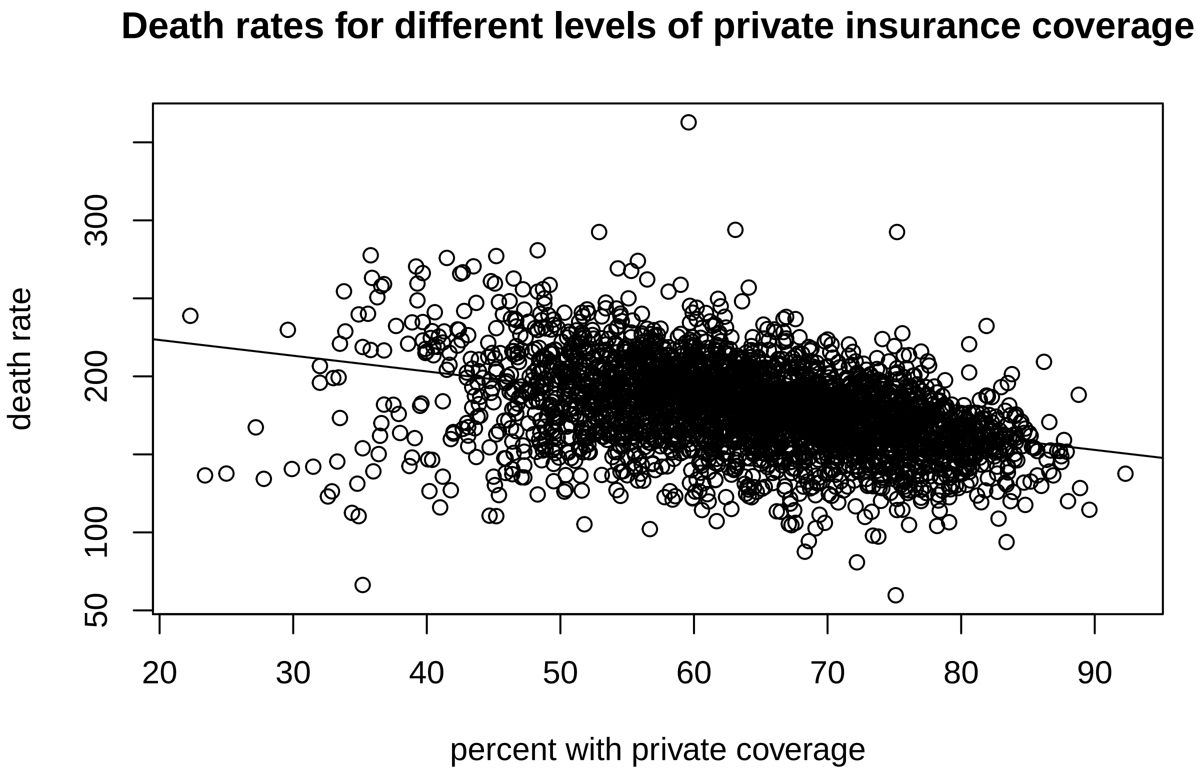
The result shows that 80% of the counties have less than 7% of the population with double health insurance. Therefore, similar to the previous case, its relative effect on the target variable will be minimal.

Analysis of Key Relationships

Mortality rates for different levels of private insurance coverage

Our first question is whether having access to a private insurance coverage is correlated with cancer mortality rates. A reasonable hypothesis would be that a cancer patient with a private insurance would be able to afford better treatment options. As a result, she or he will have better chances of survival, so we should expect negative correlation between deathRate and PctPrivateCoverage. Let's build a scatterplot showing the relationshoip between these two variables. In order to get a better insight into what linear relationship exists in the data, we add the ordinary least squares regression line to the plot and calculate the correlation.

```
plot(cancer.df$PctPrivateCoverage, cancer.df$deathRate,
     xlab = "percent with private coverage", ylab = "death rate",
     main = "Death rates for different levels of private insurance coverage")
abline(lm(cancer.df$deathRate ~ cancer.df$PctPrivateCoverage))
```




```
cor(cancer.df$deathRate, cancer.df$PctPrivateCoverage)
```

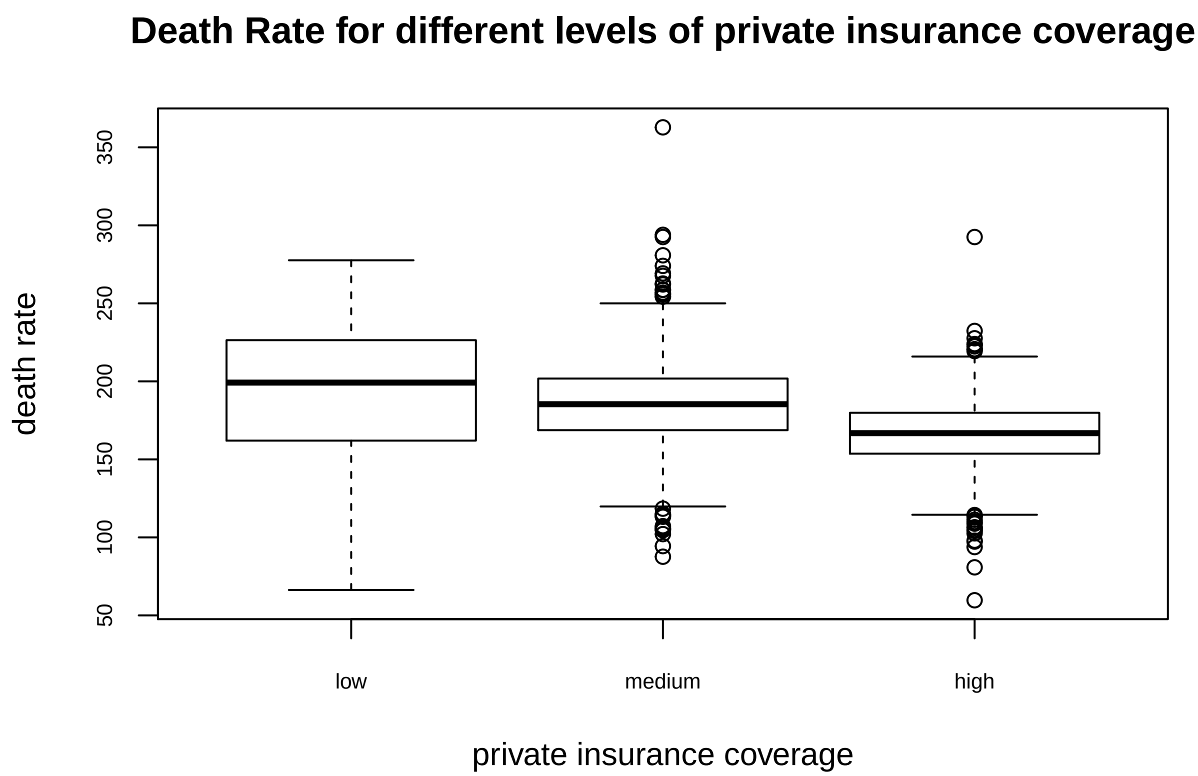
```
## [1] -0.3860655
```

Both from the plot and from the correlation value (-0.39) we can see that they're in agreement with our original hypothesis that mortality rates ared lower for the populations with higher percentage of private insurance coverage. The relationship does appear to be linear from about 40% of coverage onward (this is where the majority of observations seem to fall). At the lower end of the graph, the spread of values is much higher. Despite showing the overall trend, the scatterplot is quite noisy, so we might want to confirm our conclusion by generating boxplots for different categories of coverage. First, we'll split the range of PctPrivateCoverage variables into three bins and label them as "low", "medium", and "high" brackets of private insurance coverage. We then will build three separate boxplots for these categories and see how they're distributed relative to deathRate.

```
levels(cut(cancer.df$PctPrivateCoverage, 3, include.lowest=TRUE))
```

```
## [1] "[22.2,45.6]" "(45.6,69]"   "(69,92.4]"
```

```
boxplot(deathRate ~ cut(PctPrivateCoverage, 3, include.lowest=TRUE,
        labels=c("low", "medium", "high")),
        data = cancer.df,
        cex.axis = .7,
        main = "Death Rate for different levels of private insurance coverage",
        xlab = "private insurance coverage", ylab = "death rate")
```



The boxplot shows a clear downward trend from the "medium" to "high" category, with the majority of values clustered around the median. The "low" category boxplot, on the other hand, has a much wider spread of data points. We might conclude, therefore, that the effect of private insurance on mortality rates is only noticable for the percantage of coverage which is above certain threshold (~40%). The "medium" category also includes the high death rate outlier we've identified earlier (>350). Therefore, the high mortality rate can't be explained by the inadequate private insurance coverage.

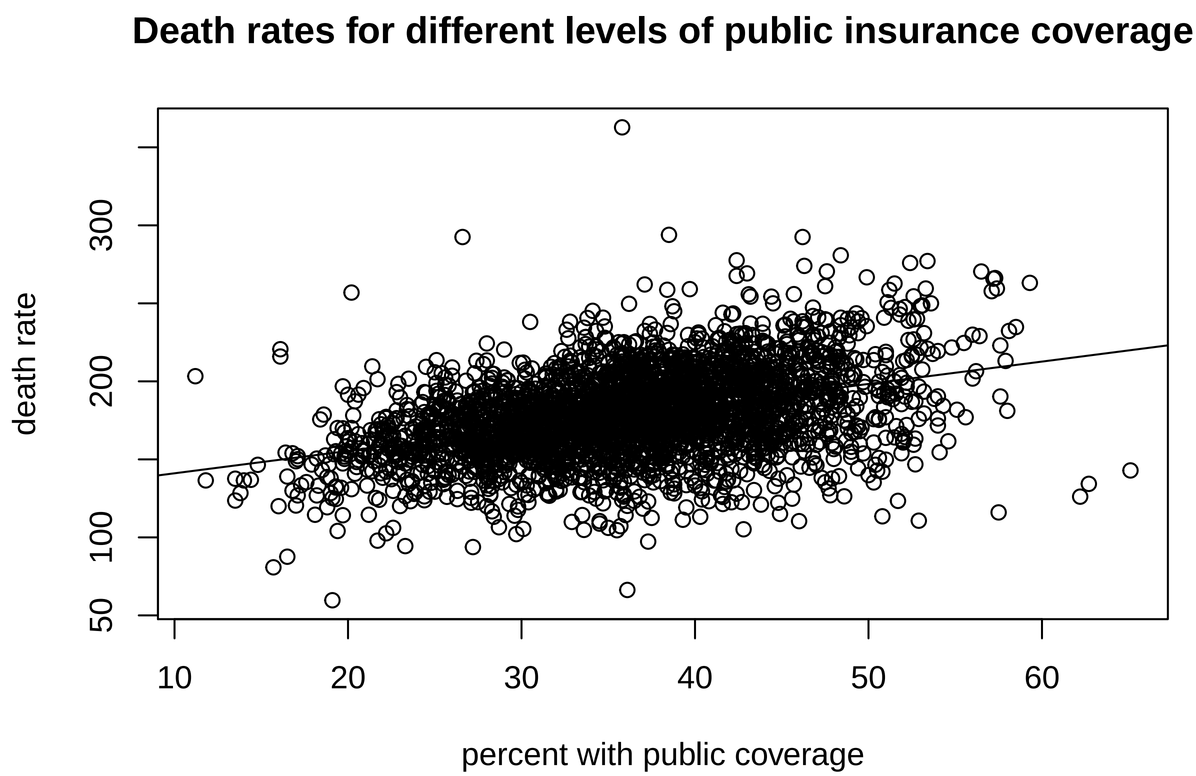
Summary of observations:

1. There's a mild negative correlation between cancer mortality rates and access to the private insurance coverage
2. The effect of negative correlation becomes noticable only after the coverage percentage reaches ~40%. Below this point, the data spread is much wider and the effect of private coverage is not obvious.

Mortality rates for different levels of public insurance coverage

We now explore whether public insurance coverage has a similar effect on cancer mortality rates. We repeat the same steps of data analysis we've performed for the private insurance variable:

```r
plot(cancer.df$PctPublicCoverage, cancer.df$deathRate,
     xlab = "percent with public coverage", ylab = "death rate",
     main = "Death rates for different levels of public insurance coverage")
abline(lm(cancer.df$deathRate ~ cancer.df$PctPublicCoverage))
```



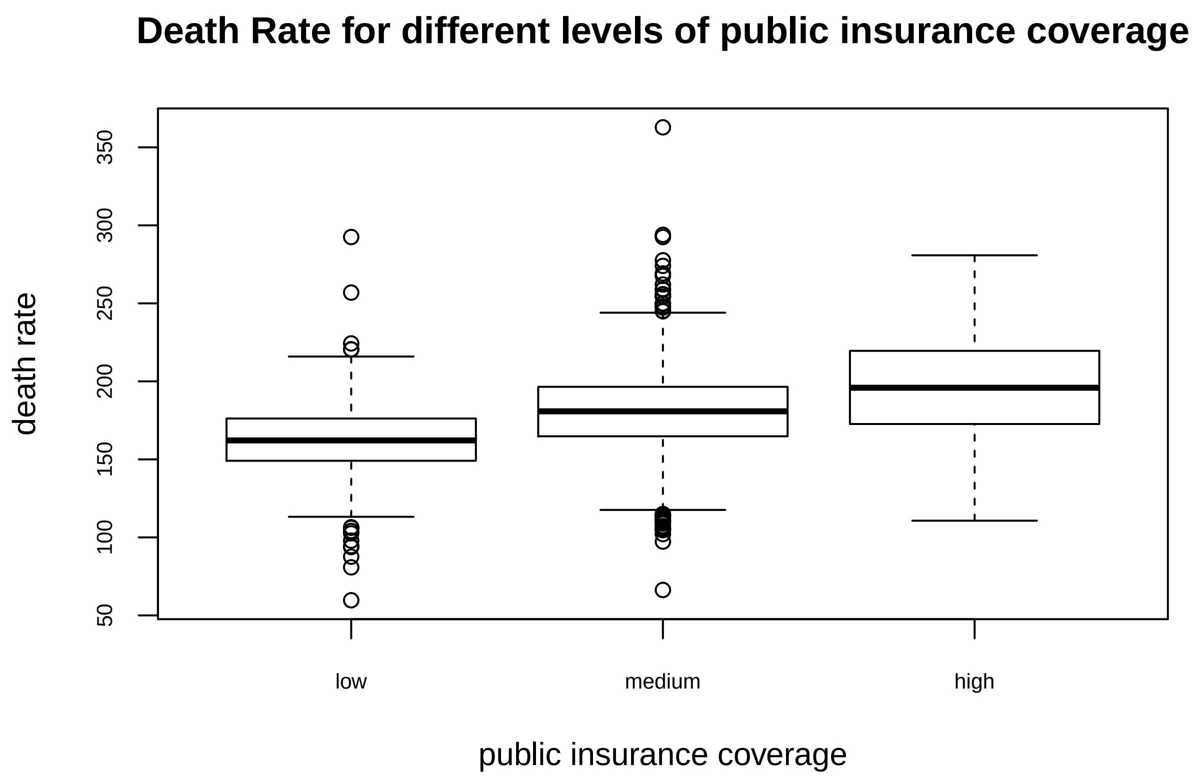

```
cor(cancer.df$deathRate, cancer.df$PctPublicCoverage)
```

```
## [1] 0.4045717
```

```
levels(cut(cancer.df$PctPublicCoverage, 3, include.lowest=TRUE))
```

```
## [1] "[11.1,29.2]" "(29.2,47.1]" "(47.1,65.2]"
```

```
boxplot(deathRate ~ cut(PctPublicCoverage, 3, include.lowest=TRUE,
        labels=c("low", "medium", "high")),
        data = cancer.df,
        cex.axis = .7,
        main = "Death Rate for different levels of public insurance coverage",
        xlab = "public insurance coverage", ylab = "death rate")
```



Contrary to our expectations, we see the directly opposite relationship between public insurance coverage and cancer mortality rates. The values are positively correlated and the correlation's absolute value is even higher than the one we calculated for private insurance coverage. There's also no salient threshold effect we observed earlier: the relationship appears to be linear throughout the entire range of coverage percentage.

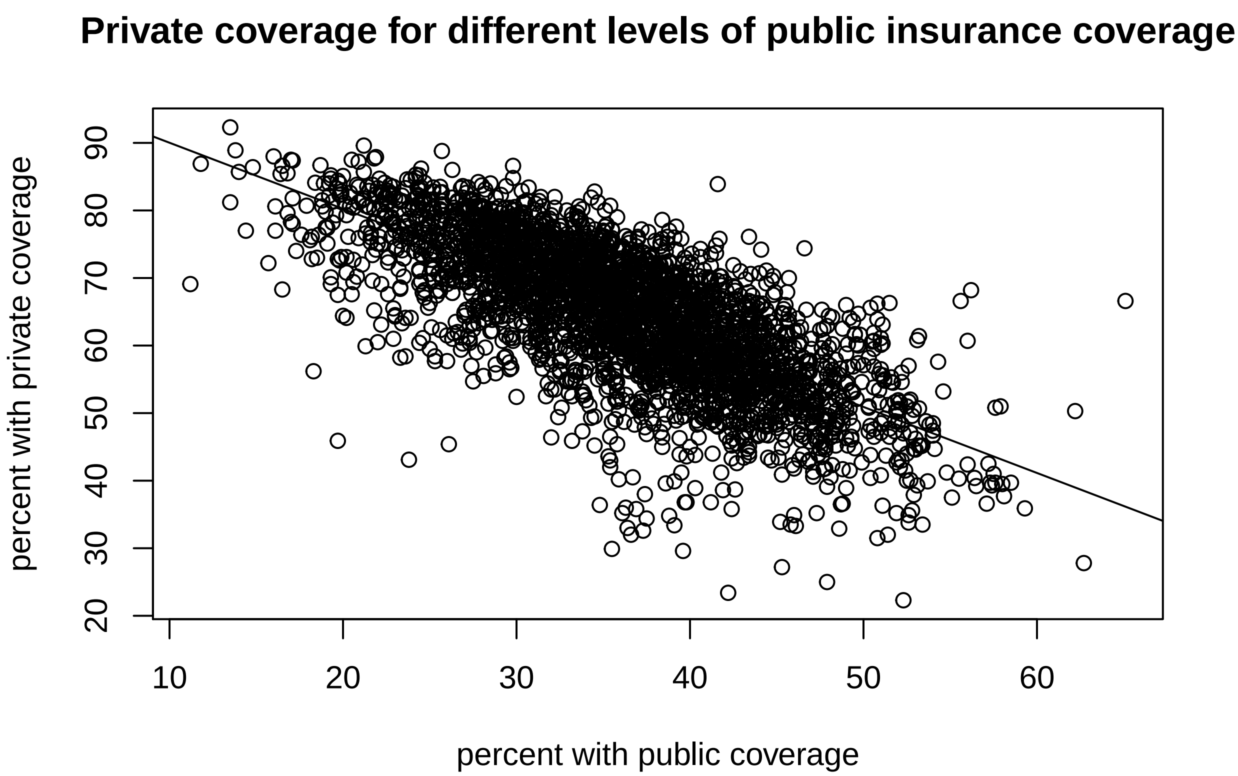
Summary of observations:

1. There's a noticeble positive correlation between cancer mortality rates and availability of public insurance coverage
2. The relationship is very close to the linear one throughout the entire range of coverage's percentages

Relationship between private and public insurance coverage

We will now explore if there is any meaningful relationship between private and public insurance coverage. As in the earlier steps of our investigation, we generate a scatterplot and box plots for these variables, and compute the correlation value:

```
plot(cancer.df$PctPublicCoverage, cancer.df$PctPrivateCoverage,
     xlab = "percent with public coverage", ylab = "percent with private coverage",
     main = "Private coverage for different levels of public insurance coverage")
abline(lm(cancer.df$PctPrivateCoverage ~ cancer.df$PctPublicCoverage))
```



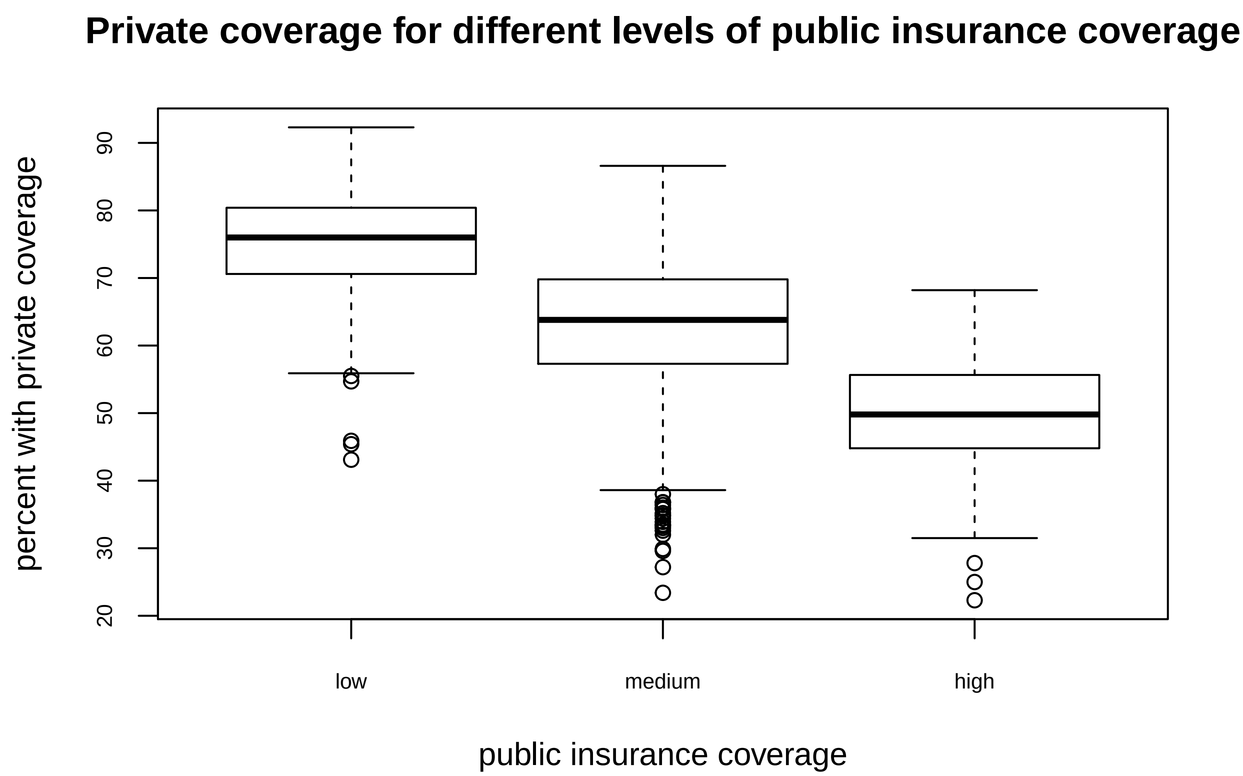

```
cor(cancer.df$PctPrivateCoverage, cancer.df$PctPublicCoverage)
```

```
## [1] -0.7200115
```

```
levels(cut(cancer.df$PctPublicCoverage, 3, include.lowest=TRUE))
```

```
## [1] "[11.1,29.2]" "(29.2,47.1]" "(47.1,65.2]"
```

```
boxplot(PctPrivateCoverage ~ cut(PctPublicCoverage, 3, include.lowest=TRUE,
        labels=c("low", "medium", "high")),
        data = cancer.df,
        cex.axis = .7,
        main = "Private coverage for different levels of public insurance coverage",
        xlab = "public insurance coverage", ylab = "percent with private coverage")
```



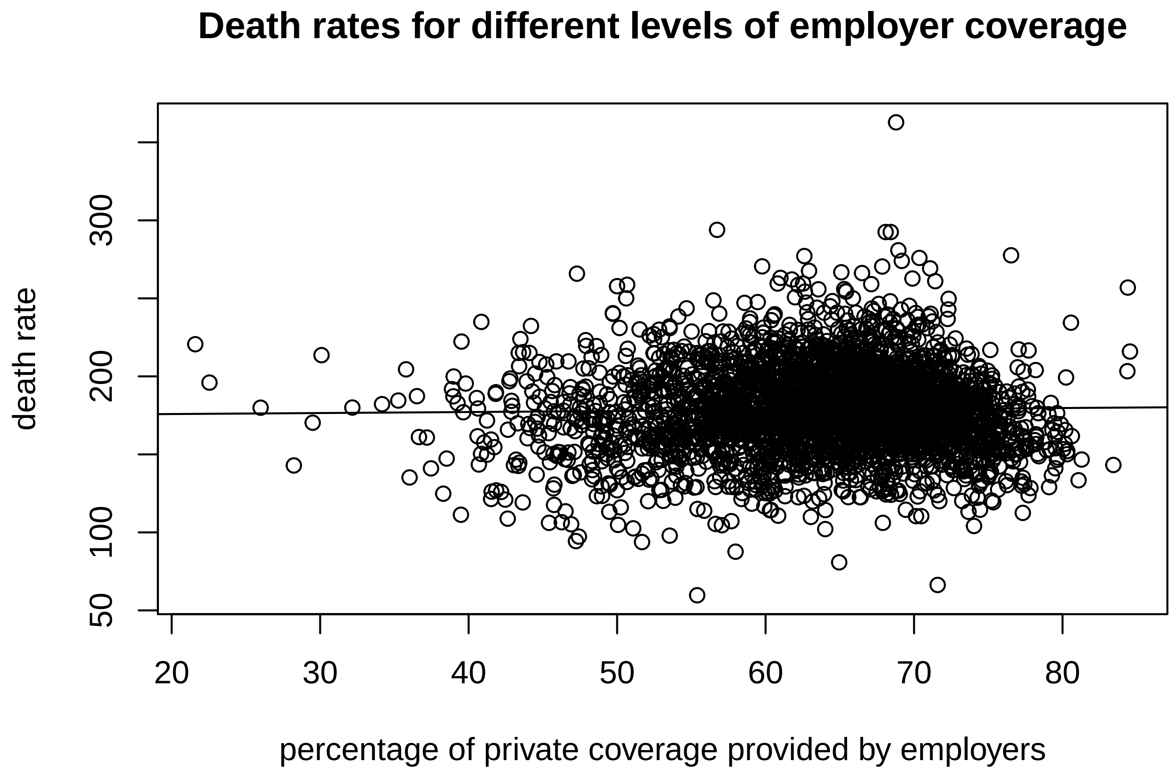
Summary of observations:

1. There's a strong negative correlation between private and public insurance coverage
2. The majority of observations cluster around ordinary least squares regression line, emphasizing linear relationship between the two variables

Mortality rates for different levels of employer-sponsored private coverage

Finally, let's see if the relative portion of employer-sponsored private insurance coverage has any relationship with cancer mortality rates.

```
plot(cancer.df$EmpSponsoredPct, cancer.df$deathRate,
     xlab = "percentage of private coverage provided by employers",
     ylab = "death rate",
     main = "Death rates for different levels of employer coverage")
abline(lm(cancer.df$deathRate ~ cancer.df$EmpSponsoredPct))
```




```
cor(cancer.df$deathRate, cancer.df$EmpSponsoredPct)
```

```
## [1] 0.01885173
```

Summary of observations:

1. From the data analysis above, we don't detect any noticable relationships between the cancer mortality rates and the composition of the private insurance coverage.

Conclusion: insurance coverage per ce doesn't improve cancer mortality rates

1. The data analysis we performed has refuted our hypothesis that cancer patients who have access to health insurance have better chances of survival.
2. We also saw that private and public insurance demonstrate opposite relationships with cancer mortality rates.
3. One of the important findings is that higher levels of public insurance coverage are strongly correlated with lower percentage of private insurance coverage.
4. The relative amount of private coverage sponsored by employers have no detectable relationships with cancer mortality rates.
5. In order to explain these counter-intuitive results, as well as the 'threshold effect' of private coverage, we need to explore other variables that might directly influence these relationships.

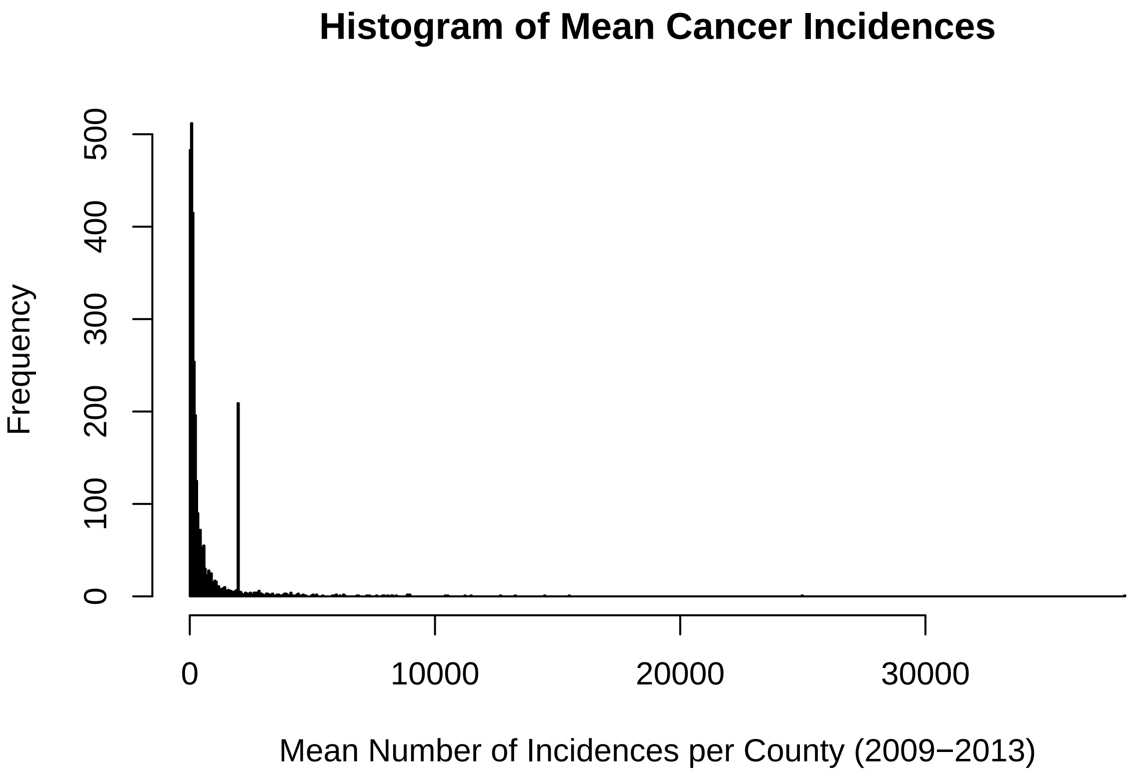
Analysis of Secondary Effects

Since we have seen that private and public insurance have opposite relationships with cancer mortality rates and highly negatively correlated between each other, we now must explore other variables that could be influencing these relationships.

We will start with a univariate analysis of other selected variables

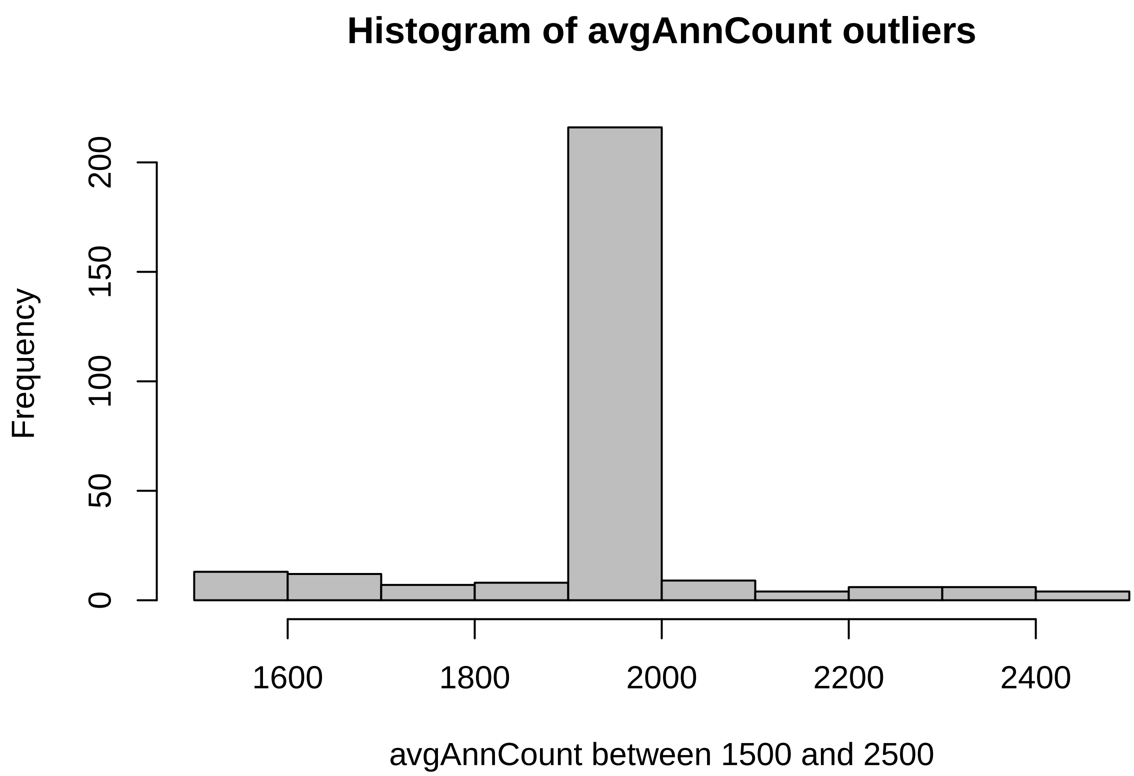
avgAnnCount

```
hist(cancer.df$avgAnnCount, breaks="fd", xlab = "Mean Number of Incidences per County (2009-2013)", ylab
```



That second peak seems a little odd. We should take a look at what is going on there, where the avgAnnCount is between 1500 and 2500

```
hist(cancer.df$avgAnnCount[cancer.df$avgAnnCount>1500 & cancer.df$avgAnnCount<2500],xlab="avgAnnCount be
```



We can now see that the peaks are between avgAnnCount of 1900 and 2000, a range easier to investigate:

```
cancer.df[cancer.df$avgAnnCount>1900 & cancer.df$avgAnnCount<2000,]
```

```
##         X avgAnnCount medIncome popEst2015 povertyPercent
## 112   112    1962.668     46840      24200           13.2
## 113   113    1962.668     51241    2114801           15.6
## 114   114    1962.668     60322      47710           10.3
## 115   115    1962.668     72648      51935           10.8
## 116   116    1962.668     47180        829           14.0
## 117   117    1962.668     70535       2016            9.8
## 118   118    1962.668     67423      17019           10.7
## 119   119    1962.668     74347       5903           11.0
## 120   120    1962.668     45629       5036           15.1
## 121   121    1962.668     48576      52585           13.7
## 122   122    1962.668     40714       4478           19.0
## 123   123    1962.668     42881      42477           16.8
## 124   124    1962.668     52001       6634           18.5
## 125   125    1962.668     55291       3987            8.4
## 126   126    1962.668     52862     446903           15.4
## 127   127    1962.668     57243       9811           13.7
## 128   128    1962.668     45639      54521           19.3
## 149   149    1997.000     73750     371398           11.8
## 368   368    1962.668     40676      15702           14.9
## 369   369    1962.668     70868     344151            7.6
## 370   370    1962.668     51116      33386           14.6
## 371   371    1962.668     43706      45672           18.5
## 372   372    1962.668     52531      39710           13.6
## 568   568    1908.000     45698     392664           16.1
## 1014 1014    1948.000     75689     375391            8.3
```

```
## 1026 1026    1912.000     62116     444769            17.4
## 1295 1295    1962.668     50886       2640            10.4
## 1296 1296    1962.668     45341       2591            12.0
## 1297 1297    1962.668     60279       7733            10.9
## 1298 1298    1962.668     58543       6133             8.3
## 1299 1299    1962.668     52795       1330            10.8
## 1300 1300    1962.668     39732       6244            16.9
## 1301 1301    1962.668     47709       2474            12.8
## 1302 1302    1962.668     50525       5817            12.9
## 1303 1303    1962.668     55074      35073            12.8
## 1304 1304    1962.668     59596       4064            10.7
## 1305 1305    1962.668     52394       1893             8.8
## 1306 1306    1962.668     53796      13338            10.3
## 1307 1307    1962.668     56927      18930             9.4
## 1308 1308    1962.668     44101       2970            13.5
## 1309 1309    1962.668     76104     580159             6.6
## 1310 1310    1962.668     53484       3956            12.2
## 1311 1311    1962.668     53378       7687            11.2
## 1312 1312    1962.668     46318       2564            12.8
## 1313 1313    1962.668     53739       1670            10.9
## 1314 1314    1962.668     65549      79315            10.9
## 1315 1315    1962.668     44896       3105            12.7
## 1316 1316    1962.668     44520       9536            14.8
## 1317 1317    1962.668     49852       2825             9.7
## 1318 1318    1962.668     43038      33339            18.0
## 1319 1319    1962.668     57878      28941             8.8
## 1320 1320    1962.668     47723      12103            11.9
## 1321 1321    1962.668     47901       9936            11.1
## 1322 1322    1962.668     53903       4330            11.7
## 1323 1323    1962.668     63924      32553             9.5
## 1324 1324    1962.668     48645       6282            11.2
## 1325 1325    1962.668     42221      33314            18.0
## 1326 1326    1962.668     44774       5645            12.5
## 1327 1327    1962.668     55378       3007            11.1
## 1328 1328    1962.668     54149      10227             9.9
## 1329 1329    1962.668     41527      16346            17.7
## 1330 1330    1962.668     51923       3005            10.0
## 1331 1331    1962.668     44846       5550            13.5
## 1332 1332    1962.668     52749      15847            12.9
## 1333 1333    1962.668     38848       3683            12.9
## 1334 1334    1962.668     52744       5975            10.4
## 1335 1335    1962.668     47351       6838            13.9
## 1336 1336    1962.668     45856       5428            11.4
## 1337 1337    1962.668     65373      23298            10.0
## 1338 1338    1962.668     54701       9691            10.3
## 1339 1339    1962.668     44932       2506            11.8
## 1340 1340    1962.668     46533      63718            15.8
## 1341 1341    1962.668     42381       4725            12.7
## 1342 1342    1962.668     49152       9977            14.7
## 1343 1343    1962.668     46468      75247            20.2
## 1344 1344    1962.668     48383       5174            12.0
## 1345 1345    1962.668     43083       3130            12.1
## 1346 1346    1962.668     45443       7039            13.3
## 1347 1347    1962.668     48460      55691            13.0
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## 1348 1348    1962.668     56032       4964              8.3
## 1349 1349    1962.668     51175     511574             14.7
## 1350 1350    1962.668     47381      23152             15.7
## 1351 1351    1962.668     52795     178725             15.0
## 1352 1352    1962.668     52300       2512             10.9
## 1353 1353    1962.668     43100       5983             16.2
## 1354 1354    1962.668     41303       3704             13.5
## 1355 1355    1962.668     45945       4236             14.1
## 1356 1356    1962.668     56591       2072             11.5
## 1357 1357    1962.668     59773       5806              9.7
## 1358 1358    1962.668     52476      23535             13.3
## 1359 1359    1962.668     50639       7904             11.3
## 1360 1360    1962.668     46859       2927              9.9
## 1361 1361    1962.668     59160       6951              9.6
## 1362 1362    1962.668     49109       1518             12.0
## 1363 1363    1962.668     43264       5598             10.8
## 1364 1364    1962.668     53447       2157             11.5
## 1365 1365    1962.668     39764       8856             16.7
## 1366 1366    1962.668     35502       3115             18.4
## 1367 1367    1962.668     37087     163369             24.4
## 1486 1486    1940.000     56443     449144             11.8
## 1564 1564    1976.000     65555     401515              9.5
## 1744 1744    1931.000     61510     300813             10.0
## 1840 1840    1931.000     88516     716087              8.8
## 1924 1924    1929.000     70929     537559             10.9
## 2454 2454    1962.668     46495       5040             12.8
## 2455 2455    1962.668     49513      65787             17.9
## 2456 2456    1962.668     52272      25313              8.9
## 2457 2457    1962.668     53291      35569             12.1
## 2458 2458    1962.668     88500      98741              4.8
## 2459 2459    1962.668     45179      28706             15.7
## 2460 2460    1962.668     51274      12109             11.5
## 2461 2461    1962.668     75122      54293              6.2
## 2462 2462    1962.668     55560      62324             13.3
## 2463 2463    1962.668     43674       8803             17.8
## 2464 2464    1962.668     48593       5194             10.4
## 2465 2465    1962.668     48176      11549             12.9
## 2466 2466    1962.668     50162      63428             10.9
## 2467 2467    1962.668     76269     414686              7.3
## 2468 2468    1962.668     68777      20364              7.6
## 2469 2469    1962.668     52298      37075              9.6
## 2470 2470    1962.668     48163      14050             13.5
## 2471 2471    1962.668     52444      20834             11.6
## 2472 2472    1962.668     47203      30613             12.5
## 2473 2473    1962.668     60869      46435              9.6
## 2474 2474    1962.668     48179       5903             10.5
## 2475 2475    1962.668     64490    1223149             13.0
## 2476 2476    1962.668     59900      18773              8.4
## 2477 2477    1962.668     47944      20655             12.2
## 2478 2478    1962.668     65342      38429              7.8
## 2479 2479    1962.668     48525      45435             14.7
## 2480 2480    1962.668     53700      10079              9.8
## 2481 2481    1962.668     48908      15837             13.8
## 2482 2482    1962.668     57405      42542             11.5
```

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## 2483 2483    1962.668     50372      4424          9.9
## 2484 2484    1962.668     44113     12841         15.3
## 2485 2485    1962.668     48245      6856         10.4
## 2486 2486    1962.668     52381     10631         10.5
## 2487 2487    1962.668     44727      3923         10.7
## 2488 2488    1962.668     61665     27663          8.9
## 2489 2489    1962.668     48449      5771         10.2
## 2490 2490    1962.668     53552     25673         11.5
## 2491 2491    1962.668     60114     35932          7.9
## 2492 2492    1962.668     39926      5457         19.6
## 2493 2493    1962.668     54433      9423          9.6
## 2494 2494    1962.668     52042     20022         12.2
## 2495 2495    1962.668     54354     23102         10.0
## 2496 2496    1962.668     48434     25788         12.0
## 2497 2497    1962.668     50685     32775         11.8
## 2498 2498    1962.668     47537     39116         12.1
## 2499 2499    1962.668     52219      8413          9.6
## 2500 2500    1962.668     61279     33347         10.2
## 2501 2501    1962.668     50684     21770         13.0
## 2502 2502    1962.668     51597      6678         13.4
## 2503 2503    1962.668     69430    151436          9.8
## 2504 2504    1962.668     51510     57716         11.2
## 2505 2505    1962.668     50905     14219          9.3
## 2506 2506    1962.668     42157     29069         17.5
## 2507 2507    1962.668     47164      9271         12.2
## 2508 2508    1962.668     50175     31533         12.7
## 2509 2509    1962.668     51343     11041         10.4
## 2510 2510    1962.668     55070    538133         16.5
## 2511 2511    1962.668     48188      4055          9.2
## 2512 2512    1962.668     49934     15471         12.4
## 2513 2513    1962.668     54386     14892         11.3
## 2514 2514    1962.668     60317     65400         13.0
## 2515 2515    1962.668     55352      9600          9.6
## 2516 2516    1962.668     53838     15770          9.2
## 2517 2517    1962.668     49714    200431         17.0
## 2518 2518    1962.668     91688    141660          5.5
## 2519 2519    1962.668     76512     91705          7.2
## 2520 2520    1962.668     59893     14875          9.2
## 2521 2521    1962.668     55832    154708         13.4
## 2522 2522    1962.668     57850     36755         10.9
## 2523 2523    1962.668     55292      9796         14.2
## 2524 2524    1962.668     51032      9340         10.8
## 2525 2525    1962.668     43287     24257         17.8
## 2526 2526    1962.668     49536      3401         12.2
## 2527 2527    1962.668     58752     21239          7.3
## 2528 2528    1962.668     41909     13875         15.8
## 2529 2529    1962.668     54183     18989         10.1
## 2530 2530    1962.668     84113    251597          6.0
## 2531 2531    1962.668     48658     10952         10.4
## 2532 2532    1962.668     54536      6396         10.3
## 2533 2533    1962.668     49365     50885         15.8
## 2534 2534    1962.668     76489    131311          6.0
## 2535 2535    1962.668     51028      9875         11.2
## 3019 3019    1962.668     39196     12717         18.2
```

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## 3020 3020    1962.668     45368       7808           14.3
## 3021 3021    1962.668     44199      16398           17.4
## 3022 3022    1962.668     51676       4823           12.4
## 3023 3023    1962.668     46942      27103           17.8
## 3024 3024    1962.668     38430      14712           18.4
## 3025 3025    1962.668     45781       9776           17.3
## 3026 3026    1962.668     60123      66741           11.3
## 3027 3027    1962.668     47025       2679           13.2
## 3028 3028    1962.668     39120       3402           16.4
## 3029 3029    1962.668     41797       2679           11.5
## 3030 3030    1962.668     47650       2096           13.0
## 3031 3031    1962.668     53131       8347           10.9
## 3032 3032    1962.668     42697       9219           14.0
## 3033 3033    1962.668     55705       8384           10.9
## 3034 3034    1962.668     45353       1843           11.4
## 3035 3035    1962.668     45180      35788           15.0
## 3036 3036    1962.668     41434       2932           13.9
## 3037 3037    1962.668     47493      19303           11.1
## 3038 3038    1962.668     47599       7797           15.0
## 3039 3039    1962.668     49246     118053           19.4
## 3040 3040    1962.668     49256       2968           10.5
## 3041 3041    1962.668     36471       2605           17.4
## 3042 3042    1962.668     49508      29029           13.0
## 3043 3043    1962.668     46961       6343           12.4
## 3044 3044    1962.668     48609      37118           18.8
## 3045 3045    1962.668     51144      34536           15.0
## 3046 3046    1962.668     50745      25609           13.3
## 3047 3047    1962.668     41193      37030           13.9
##                binnedInc MedianAge MedianAgeMale MedianAgeFemale
## 112    (45201, 48021.6]      38.9          37.1            40.8
## 113  (51046.4, 54545.6]      36.4          35.9            37.0
## 114  (54545.6, 61494.5]      49.4          48.7            50.0
## 115   (61494.5, 125635]      33.5          32.9            34.1
## 116    (45201, 48021.6]      46.5          43.0            47.5
## 117   (61494.5, 125635]      43.9          44.9            42.6
## 118   (61494.5, 125635]      35.3          34.9            35.4
## 119   (61494.5, 125635]      37.2          36.4            37.6
## 120    (45201, 48021.6]      37.4          37.3            38.1
## 121  (48021.6, 51046.4]      43.2          43.1            43.4
## 122  (40362.7, 42724.4]      48.7          48.0            49.2
## 123    (42724.4, 45201]      50.8          50.8            50.8
## 124  (51046.4, 54545.6]      41.3          39.5            44.1
## 125  (54545.6, 61494.5]      54.7          54.0            55.6
## 126  (51046.4, 54545.6]      37.6          36.8            38.4
## 127  (54545.6, 61494.5]      39.4          38.4            40.3
## 128    (45201, 48021.6]      42.6          41.2            44.4
## 149   (61494.5, 125635]      38.4          36.9            39.9
## 368  (40362.7, 42724.4]      53.1          52.7            53.4
## 369   (61494.5, 125635]      37.9          37.2            38.7
## 370  (51046.4, 54545.6]      42.4          42.0            42.9
## 371    (42724.4, 45201]      33.3          31.8            34.7
## 372  (51046.4, 54545.6]      35.4          35.3            35.6
## 568    (45201, 48021.6]      36.4          34.8            37.9
## 1014  (61494.5, 125635]      41.0          39.7            42.2
```

```
## 1026  (61494.5, 125635]      33.6           32.4            35.0
## 1295 (48021.6, 51046.4]      47.4           45.3            50.1
## 1296   (45201, 48021.6]      49.8           49.0            51.9
## 1297 (54545.6, 61494.5]      32.8           32.4            33.2
## 1298 (54545.6, 61494.5]      36.1           36.8            35.0
## 1299 (51046.4, 54545.6]      49.4           48.7            49.9
## 1300 (37413.8, 40362.7]      48.0           48.0            48.0
## 1301   (45201, 48021.6]      38.0           35.8            39.1
## 1302 (48021.6, 51046.4]      43.0           39.7            46.7
## 1303 (54545.6, 61494.5]      38.6           37.7            39.3
## 1304 (54545.6, 61494.5]      36.1           32.6            38.5
## 1305 (51046.4, 54545.6]      47.8           46.3            49.3
## 1306 (51046.4, 54545.6]      40.8           39.4            42.5
## 1307 (54545.6, 61494.5]      43.5           42.6            44.6
## 1308   (42724.4, 45201]      52.1           50.7            52.8
## 1309  (61494.5, 125635]      36.8           35.6            38.1
## 1310 (51046.4, 54545.6]      34.8           30.6            39.3
## 1311 (51046.4, 54545.6]      45.2           41.7            46.8
## 1312   (45201, 48021.6]      41.7           41.3            42.4
## 1313 (51046.4, 54545.6]     535.2           44.7            44.4
## 1314  (61494.5, 125635]      37.3           36.4            38.6
## 1315   (42724.4, 45201]      46.2           43.8            47.9
## 1316   (42724.4, 45201]      43.7           44.3            42.9
## 1317 (48021.6, 51046.4]      42.2           40.6            45.7
## 1318   (42724.4, 45201]      32.5           32.5            32.4
## 1319 (54545.6, 61494.5]      42.0           40.2            43.6
## 1320   (45201, 48021.6]      45.0           43.7            46.0
## 1321   (45201, 48021.6]      45.0           43.3            46.3
## 1322 (51046.4, 54545.6]      39.8           36.5            42.4
## 1323  (61494.5, 125635]      40.4           39.5            41.4
## 1324 (48021.6, 51046.4]      44.4           40.8            48.0
## 1325 (40362.7, 42724.4]      39.4           37.0            41.9
## 1326   (42724.4, 45201]      47.6           46.6            49.5
## 1327 (54545.6, 61494.5]      41.6           38.3            46.3
## 1328 (51046.4, 54545.6]      41.6           39.7            43.6
## 1329 (40362.7, 42724.4]      40.0           39.7            40.6
## 1330 (51046.4, 54545.6]      49.2           46.0            51.9
## 1331   (42724.4, 45201]      44.0           42.1            48.5
## 1332 (51046.4, 54545.6]      42.6           42.2            42.9
## 1333 (37413.8, 40362.7]      48.5           46.5            49.7
## 1334 (51046.4, 54545.6]      42.2           39.5            45.4
## 1335   (45201, 48021.6]      43.1           41.5            48.2
## 1336   (45201, 48021.6]      44.7           44.2            45.5
## 1337  (61494.5, 125635]      34.7           34.7            34.6
## 1338 (54545.6, 61494.5]      39.1           35.0            42.6
## 1339   (42724.4, 45201]      50.9           48.7            52.4
## 1340   (45201, 48021.6]      39.5           37.6            42.3
## 1341 (40362.7, 42724.4]      50.9           50.0            51.7
## 1342 (48021.6, 51046.4]      37.9           35.3            41.9
## 1343   (45201, 48021.6]      24.7           24.5            25.3
## 1344 (48021.6, 51046.4]      43.9           43.2            45.3
## 1345   (42724.4, 45201]      48.8           48.1            49.8
## 1346   (45201, 48021.6]      47.1           43.8            48.5
## 1347 (48021.6, 51046.4]      37.7           36.8            39.1
```

```
## 1348 (54545.6, 61494.5]       42.0           40.7             43.4
## 1349 (51046.4, 54545.6]       34.6           33.4             35.7
## 1350   (45201, 48021.6]       29.4           29.2             29.6
## 1351 (51046.4, 54545.6]       38.8           37.4             40.1
## 1352 (51046.4, 54545.6]       45.7           43.1             48.3
## 1353   (42724.4, 45201]       38.4           39.4             36.8
## 1354 (40362.7, 42724.4]       50.7           50.3             50.9
## 1355   (45201, 48021.6]       43.7           42.3             45.2
## 1356 (54545.6, 61494.5]       35.7           36.9             33.6
## 1357 (54545.6, 61494.5]       34.9           34.3             37.0
## 1358 (51046.4, 54545.6]       40.8           39.4             41.7
## 1359 (48021.6, 51046.4]       35.3           34.2             37.2
## 1360   (45201, 48021.6]       49.1           48.8             49.4
## 1361 (54545.6, 61494.5]       42.1           41.9             43.0
## 1362 (48021.6, 51046.4]       41.8           43.4             38.8
## 1363   (42724.4, 45201]       46.3           44.1             48.4
## 1364 (51046.4, 54545.6]       35.7           34.5             40.5
## 1365 (37413.8, 40362.7]       43.8           42.1             46.1
## 1366 (34218.1, 37413.8]       47.4           46.9             48.6
## 1367 (34218.1, 37413.8]       33.3           32.4             34.2
## 1486 (54545.6, 61494.5]       39.1           37.1             40.5
## 1564  (61494.5, 125635]       41.3           40.1             42.5
## 1744  (61494.5, 125635]       41.8           40.0             43.2
## 1840  (61494.5, 125635]       35.5           34.6             36.3
## 1924  (61494.5, 125635]       36.4           35.5             37.3
## 2454   (45201, 48021.6]       49.2           47.6             50.4
## 2455 (48021.6, 51046.4]       30.1           29.3             31.0
## 2456 (51046.4, 54545.6]       43.5           42.0             45.2
## 2457 (51046.4, 54545.6]       41.0           40.6             41.8
## 2458  (61494.5, 125635]       36.9           36.1             37.6
## 2459   (42724.4, 45201]       48.3           48.0             48.6
## 2460 (51046.4, 54545.6]       43.0           42.5             44.3
## 2461  (61494.5, 125635]       40.2           38.7             41.4
## 2462 (54545.6, 61494.5]       32.4           32.0             32.9
## 2463   (42724.4, 45201]       42.5           41.5             43.7
## 2464 (48021.6, 51046.4]       51.3           50.5             52.6
## 2465 (48021.6, 51046.4]       42.8           42.0             44.2
## 2466 (48021.6, 51046.4]       43.5           42.7             44.5
## 2467  (61494.5, 125635]       37.5           36.5             38.6
## 2468  (61494.5, 125635]       37.9           36.9             39.0
## 2469 (51046.4, 54545.6]       44.1           42.4             45.9
## 2470 (48021.6, 51046.4]       46.7           44.1             48.3
## 2471 (51046.4, 54545.6]       43.0           41.7             44.4
## 2472   (45201, 48021.6]       44.6           43.1             46.4
## 2473 (54545.6, 61494.5]       43.0           41.3             44.4
## 2474 (48021.6, 51046.4]       46.3           44.5             48.2
## 2475  (61494.5, 125635]       36.1           35.3             37.2
## 2476 (54545.6, 61494.5]       45.0           43.6             46.4
## 2477   (45201, 48021.6]       48.0           47.7             48.4
## 2478  (61494.5, 125635]       39.5           37.8             40.4
## 2479 (48021.6, 51046.4]       45.9           44.6             47.1
## 2480 (51046.4, 54545.6]       43.4           42.7             44.3
## 2481 (48021.6, 51046.4]       43.9           42.9             44.5
## 2482 (54545.6, 61494.5]       39.9           37.7             42.2
```

```
## 2483 (48021.6, 51046.4]       48.1           46.7             49.6
## 2484   (42724.4, 45201]       47.4           46.9             47.9
## 2485 (48021.6, 51046.4]       49.8           47.8             51.6
## 2486 (51046.4, 54545.6]       50.2           50.0             50.5
## 2487   (42724.4, 45201]       50.3           51.3             48.7
## 2488  (61494.5, 125635]       41.3           41.2             41.3
## 2489 (48021.6, 51046.4]       46.5           45.1             48.4
## 2490 (51046.4, 54545.6]       35.1           33.8             36.5
## 2491 (54545.6, 61494.5]       39.9           38.7             42.0
## 2492 (37413.8, 40362.7]       36.3           35.6             37.3
## 2493 (51046.4, 54545.6]       43.8           43.2             44.3
## 2494 (51046.4, 54545.6]       45.4           44.4             47.6
## 2495 (51046.4, 54545.6]       42.0           41.8             42.2
## 2496 (48021.6, 51046.4]       40.3           38.9             41.7
## 2497 (48021.6, 51046.4]       41.2           40.0             42.5
## 2498   (45201, 48021.6]       39.0           37.7             40.8
## 2499 (51046.4, 54545.6]       47.6           46.7             48.5
## 2500 (54545.6, 61494.5]       35.7           35.6             35.7
## 2501 (48021.6, 51046.4]       36.6           35.6             37.6
## 2502 (51046.4, 54545.6]       45.4           44.4             47.1
## 2503  (61494.5, 125635]       36.7           35.8             37.7
## 2504 (51046.4, 54545.6]       46.7           45.4             48.0
## 2505 (48021.6, 51046.4]       39.1           36.6             40.3
## 2506 (40362.7, 42724.4]       43.7           42.3             45.3
## 2507   (45201, 48021.6]       42.3           39.9             44.5
## 2508 (48021.6, 51046.4]       38.9           36.9             41.5
## 2509 (51046.4, 54545.6]       46.5           44.4             48.6
## 2510 (54545.6, 61494.5]       34.6           33.5             35.7
## 2511 (48021.6, 51046.4]       42.3           41.5             42.9
## 2512 (48021.6, 51046.4]       43.2           41.7             45.0
## 2513 (51046.4, 54545.6]       44.5           43.5             45.5
## 2514 (54545.6, 61494.5]       36.4           35.0             37.4
## 2515 (54545.6, 61494.5]       41.1           40.3             42.4
## 2516 (51046.4, 54545.6]       41.2           41.1             41.3
## 2517 (48021.6, 51046.4]       40.9           39.4             42.7
## 2518  (61494.5, 125635]       35.5           35.2             35.9
## 2519  (61494.5, 125635]       35.3           34.9             35.7
## 2520 (54545.6, 61494.5]       41.4           40.1             42.7
## 2521 (54545.6, 61494.5]       34.0           33.0             34.8
## 2522 (54545.6, 61494.5]       39.8           39.1             40.2
## 2523 (54545.6, 61494.5]       32.7           31.4             33.9
## 2524 (48021.6, 51046.4]       44.5           43.5             45.8
## 2525   (42724.4, 45201]       43.0           42.1             44.0
## 2526 (48021.6, 51046.4]       48.4           47.1             49.5
## 2527 (54545.6, 61494.5]       43.8           43.1             44.7
## 2528 (40362.7, 42724.4]       43.3           41.6             44.7
## 2529 (51046.4, 54545.6]       39.0           38.2             39.6
## 2530  (61494.5, 125635]       38.9           37.8             40.0
## 2531 (48021.6, 51046.4]       39.6           38.1             41.2
## 2532 (51046.4, 54545.6]       43.7           41.9             45.7
## 2533 (48021.6, 51046.4]       33.9           33.8             33.9
## 2534  (61494.5, 125635]       35.6           35.3             36.0
## 2535 (48021.6, 51046.4]       43.0           40.7             45.1
## 3019 (37413.8, 40362.7]       41.2           39.9             43.4
```

```
## 3020   (45201, 48021.6]      41.7          40.4            42.7
## 3021   (42724.4, 45201]      35.9          34.1            37.4
## 3022 (51046.4, 54545.6]      44.9          45.3            44.7
## 3023   (45201, 48021.6]      39.3          38.5            40.5
## 3024 (37413.8, 40362.7]      37.3          34.0            40.7
## 3025   (45201, 48021.6]      42.5          41.4            43.5
## 3026 (54545.6, 61494.5]      37.8          36.5            38.7
## 3027   (45201, 48021.6]      46.2          45.0            47.6
## 3028 (37413.8, 40362.7]      49.1          46.8            51.0
## 3029 (40362.7, 42724.4]      49.6          46.4            52.5
## 3030   (45201, 48021.6]      44.4          42.2            44.8
## 3031 (51046.4, 54545.6]      42.2          41.1            44.1
## 3032 (40362.7, 42724.4]      42.3          40.1            45.5
## 3033 (54545.6, 61494.5]      44.1          42.9            44.6
## 3034   (45201, 48021.6]      45.7          43.8            49.2
## 3035   (42724.4, 45201]      38.2          36.5            40.0
## 3036 (40362.7, 42724.4]      52.3          51.9            52.8
## 3037   (45201, 48021.6]      41.7          41.2            42.3
## 3038   (45201, 48021.6]      38.8          37.3            40.5
## 3039 (48021.6, 51046.4]      28.8          28.0            29.7
## 3040 (48021.6, 51046.4]      45.2          45.2            45.3
## 3041 (34218.1, 37413.8]      50.4          49.1            52.2
## 3042 (48021.6, 51046.4]      32.2          31.0            33.8
## 3043   (45201, 48021.6]      44.2          41.1            48.8
## 3044 (48021.6, 51046.4]      30.4          29.3            31.4
## 3045 (51046.4, 54545.6]      30.9          30.5            31.2
## 3046 (48021.6, 51046.4]      39.0          36.9            40.5
## 3047 (40362.7, 42724.4]      26.2          25.5            27.0
##                               Geography AvgHouseholdSize PercentMarried
## 112            Churchill County, Nevada           2.5100           51.6
## 113                Clark County, Nevada           2.7800           44.6
## 114              Douglas County, Nevada           2.3700           58.9
## 115                 Elko County, Nevada           2.8700           56.6
## 116            Esmeralda County, Nevada           2.3500           44.3
## 117               Eureka County, Nevada           2.1700           64.7
## 118             Humboldt County, Nevada           2.7400           51.6
## 119               Lander County, Nevada           2.7900           54.3
## 120              Lincoln County, Nevada           2.5500           56.8
## 121                 Lyon County, Nevada           2.6300           51.1
## 122              Mineral County, Nevada           0.0225           41.8
## 123                  Nye County, Nevada           0.0242           54.4
## 124             Pershing County, Nevada           2.2900           44.8
## 125               Storey County, Nevada           2.2000           53.5
## 126               Washoe County, Nevada           2.5800           47.0
## 127           White Pine County, Nevada           2.7100           44.8
## 128                 Carson City, Nevada           2.4300           45.1
## 149           Mercer County, New Jersey           2.6900           47.2
## 368            Aitkin County, Minnesota           2.0500           61.2
## 369             Anoka County, Minnesota           2.7000           54.4
## 370            Becker County, Minnesota           2.4100           57.6
## 371          Beltrami County, Minnesota           2.5900           44.2
## 372            Benton County, Minnesota           2.4500           50.6
## 568            Pulaski County, Arkansas           2.4900           43.5
## 1014          Placer County, California           2.6700           55.6
```

```
## 1026    Santa Barbara County, California          2.9200          44.9
## 1295                Gove County, Kansas          2.2500          69.1
## 1296              Graham County, Kansas          2.1200          60.8
## 1297               Grant County, Kansas          2.8600          62.5
## 1298                Gray County, Kansas          2.7800          64.8
## 1299             Greeley County, Kansas          2.4600          66.6
## 1300           Greenwood County, Kansas          2.2300          55.3
## 1301            Hamilton County, Kansas          2.5900          61.8
## 1302              Harper County, Kansas          2.3400          56.6
## 1303              Harvey County, Kansas          2.4700          58.4
## 1304             Haskell County, Kansas          2.9300          58.6
## 1305            Hodgeman County, Kansas          2.3600          65.5
## 1306             Jackson County, Kansas          2.5100          61.4
## 1307           Jefferson County, Kansas          2.4700          61.7
## 1308              Jewell County, Kansas          2.1000          63.5
## 1309             Johnson County, Kansas          2.5600          56.8
## 1310              Kearny County, Kansas          2.8100          63.0
## 1311             Kingman County, Kansas          2.5400          56.6
## 1312               Kiowa County, Kansas          2.2100          60.0
## 1313                Lane County, Kansas          2.0700          55.9
## 1314         Leavenworth County, Kansas          2.7000          53.1
## 1315             Lincoln County, Kansas          2.3100          56.3
## 1316                Linn County, Kansas          2.2600          61.7
## 1317               Logan County, Kansas          2.2100          59.7
## 1318                Lyon County, Kansas          2.4300          46.0
## 1319           McPherson County, Kansas          2.3700          58.9
## 1320              Marion County, Kansas          2.4000          57.9
## 1321            Marshall County, Kansas          2.2700          61.4
## 1322               Meade County, Kansas          2.5100          61.7
## 1323               Miami County, Kansas          2.5500          59.3
## 1324            Mitchell County, Kansas          2.2500          59.8
## 1325          Montgomery County, Kansas          2.4700          50.3
## 1326              Morris County, Kansas          2.3600          62.0
## 1327              Morton County, Kansas          2.5300          54.2
## 1328              Nemaha County, Kansas          2.3200          61.9
## 1329              Neosho County, Kansas          2.4700          53.1
## 1330                Ness County, Kansas          2.1800          62.5
## 1331              Norton County, Kansas          2.2400          49.6
## 1332               Osage County, Kansas          2.4400          57.4
## 1333             Osborne County, Kansas          2.0800          59.6
## 1334              Ottawa County, Kansas          2.3900          63.8
## 1335              Pawnee County, Kansas          2.3200          46.2
## 1336            Phillips County, Kansas          2.2900          60.5
## 1337        Pottawatomie County, Kansas          2.7200          62.3
## 1338               Pratt County, Kansas          2.3900          55.5
## 1339             Rawlins County, Kansas          2.0700          61.7
## 1340                Reno County, Kansas          2.4400          53.3
## 1341            Republic County, Kansas          2.0700          57.4
## 1342                Rice County, Kansas          2.4200          56.4
## 1343               Riley County, Kansas          2.4900          39.1
## 1344               Rooks County, Kansas          2.2800          57.4
## 1345                Rush County, Kansas          2.1000          56.8
## 1346             Russell County, Kansas          2.1200          58.0
## 1347              Saline County, Kansas          2.4200          48.9
```

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## 1348                Scott County, Kansas          0.0221             65.3
## 1349             Sedgwick County, Kansas          2.5900             49.8
## 1350               Seward County, Kansas          3.0500             47.7
## 1351              Shawnee County, Kansas          2.4400             49.5
## 1352             Sheridan County, Kansas          2.2100             64.1
## 1353              Sherman County, Kansas          2.1400             54.2
## 1354                Smith County, Kansas          2.2100             60.7
## 1355             Stafford County, Kansas          2.3500             63.1
## 1356              Stanton County, Kansas          2.5800             63.5
## 1357              Stevens County, Kansas          2.8400             68.0
## 1358               Sumner County, Kansas          2.5500             56.3
## 1359               Thomas County, Kansas          2.3900             55.6
## 1360                Trego County, Kansas          2.2100             66.0
## 1361            Wabaunsee County, Kansas          2.5900             61.2
## 1362              Wallace County, Kansas          2.5200             60.1
## 1363           Washington County, Kansas          2.2700             62.5
## 1364              Wichita County, Kansas          2.7900             60.6
## 1365               Wilson County, Kansas          2.3700             53.2
## 1366              Woodson County, Kansas          2.0800             53.6
## 1367            Wyandotte County, Kansas          2.7100             41.7
## 1486            Seminole County, Florida          2.8500             46.6
## 1564            Clackamas County, Oregon          2.5900             54.9
## 1744    Northampton County, Pennsylvania          2.5600             51.4
## 1840             Fort Bend County, Texas          3.1700             58.7
## 1924            Montgomery County, Texas          2.8800             56.3
## 2454         Big Stone County, Minnesota          2.1800             63.2
## 2455        Blue Earth County, Minnesota          2.4600             43.6
## 2456             Brown County, Minnesota          2.2700             55.4
## 2457           Carlton County, Minnesota          2.5100             50.6
## 2458            Carver County, Minnesota          2.7600             62.3
## 2459              Cass County, Minnesota          2.1900             61.1
## 2460          Chippewa County, Minnesota          2.3600             56.4
## 2461           Chisago County, Minnesota          2.6300             57.2
## 2462              Clay County, Minnesota          2.5100             49.6
## 2463        Clearwater County, Minnesota          2.4800             57.1
## 2464              Cook County, Minnesota          1.9300             63.3
## 2465        Cottonwood County, Minnesota          2.3800             57.7
## 2466         Crow Wing County, Minnesota          2.3600             56.3
## 2467            Dakota County, Minnesota          2.5900             55.2
## 2468             Dodge County, Minnesota          2.6700             59.6
## 2469           Douglas County, Minnesota          2.3200             59.8
## 2470         Faribault County, Minnesota          2.1800             57.4
## 2471          Fillmore County, Minnesota          2.4000             59.1
## 2472          Freeborn County, Minnesota          2.3300             52.7
## 2473           Goodhue County, Minnesota          2.4200             55.8
## 2474             Grant County, Minnesota          2.3200             60.1
## 2475          Hennepin County, Minnesota          2.3900             47.2
## 2476           Houston County, Minnesota          2.3500             58.1
## 2477           Hubbard County, Minnesota          2.3200             62.6
## 2478            Isanti County, Minnesota          2.6800             53.6
## 2479            Itasca County, Minnesota          2.3300             58.5
## 2480           Jackson County, Minnesota          2.3200             59.4
## 2481           Kanabec County, Minnesota          2.5500             54.9
## 2482         Kandiyohi County, Minnesota          2.4800             57.7
```

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## 2483          Kittson County, Minnesota          2.2800           54.7
## 2484       Koochiching County, Minnesota          2.1800           55.0
## 2485     Lac qui Parle County, Minnesota          2.2400           61.2
## 2486             Lake County, Minnesota          2.0600           62.3
## 2487 Lake of the Woods County, Minnesota          2.4000           52.3
## 2488          Le Sueur County, Minnesota          2.5200           58.4
## 2489           Lincoln County, Minnesota          2.2500           59.1
## 2490              Lyon County, Minnesota          2.4600           51.3
## 2491            McLeod County, Minnesota          2.4000           56.0
## 2492          Mahnomen County, Minnesota          2.7100           46.3
## 2493          Marshall County, Minnesota          2.3200           59.4
## 2494            Martin County, Minnesota          2.2600           54.9
## 2495            Meeker County, Minnesota          2.4800           60.4
## 2496        Mille Lacs County, Minnesota          2.5200           51.9
## 2497          Morrison County, Minnesota          2.4300           57.5
## 2498             Mower County, Minnesota          2.5100           53.1
## 2499            Murray County, Minnesota          2.2400           61.4
## 2500          Nicollet County, Minnesota          2.3900           50.8
## 2501            Nobles County, Minnesota          2.7100           54.1
## 2502            Norman County, Minnesota          2.4000           56.2
## 2503           Olmsted County, Minnesota          2.5200           55.2
## 2504        Otter Tail County, Minnesota          2.3400           60.2
## 2505        Pennington County, Minnesota          2.3400           49.7
## 2506              Pine County, Minnesota          2.4200           51.0
## 2507         Pipestone County, Minnesota          0.0230           59.2
## 2508              Polk County, Minnesota          2.3700           52.8
## 2509              Pope County, Minnesota          2.2300           63.0
## 2510            Ramsey County, Minnesota          2.4700           44.0
## 2511          Red Lake County, Minnesota          2.4300           57.5
## 2512           Redwood County, Minnesota          2.4300           54.0
## 2513          Renville County, Minnesota          2.3400           57.1
## 2514              Rice County, Minnesota          2.5000           49.2
## 2515              Rock County, Minnesota          2.3700           61.0
## 2516            Roseau County, Minnesota          2.4400           59.7
## 2517         St. Louis County, Minnesota          2.2600           47.7
## 2518             Scott County, Minnesota          2.9000           60.3
## 2519         Sherburne County, Minnesota          2.8900           57.2
## 2520            Sibley County, Minnesota          2.4600           58.3
## 2521           Stearns County, Minnesota          2.5200           50.0
## 2522            Steele County, Minnesota          2.5200           55.0
## 2523           Stevens County, Minnesota          2.5500           51.3
## 2524             Swift County, Minnesota          2.2100           57.5
## 2525              Todd County, Minnesota          2.4500           58.7
## 2526          Traverse County, Minnesota          2.1900           62.9
## 2527           Wabasha County, Minnesota          2.3600           61.8
## 2528            Wadena County, Minnesota          2.3500           52.2
## 2529            Waseca County, Minnesota          2.4300           56.8
## 2530        Washington County, Minnesota          2.6700           57.2
## 2531          Watonwan County, Minnesota          2.4500           55.4
## 2532            Wilkin County, Minnesota          2.2900           56.0
## 2533            Winona County, Minnesota          2.4600           45.1
## 2534            Wright County, Minnesota          2.8200           60.5
## 2535   Yellow Medicine County, Minnesota          2.3300           58.8
## 3019                Allen County, Kansas          2.3900           50.4
```

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## 3020             Anderson County, Kansas          2.3700           59.5
## 3021             Atchison County, Kansas          2.5300           45.6
## 3022               Barber County, Kansas          2.3800           61.0
## 3023               Barton County, Kansas          2.3800           54.3
## 3024              Bourbon County, Kansas          2.5400           53.2
## 3025                Brown County, Kansas          2.3800           56.5
## 3026               Butler County, Kansas          2.6300           56.2
## 3027                Chase County, Kansas          2.3400           54.4
## 3028           Chautauqua County, Kansas          2.2100           59.8
## 3029             Cheyenne County, Kansas          2.0900           61.8
## 3030                Clark County, Kansas          2.2500           57.7
## 3031                 Clay County, Kansas          2.4500           62.3
## 3032                Cloud County, Kansas          2.2400           49.1
## 3033               Coffey County, Kansas          2.3300           58.5
## 3034             Comanche County, Kansas          2.4800           60.2
## 3035               Cowley County, Kansas          2.4800           51.9
## 3036              Decatur County, Kansas          1.9100           54.4
## 3037            Dickinson County, Kansas          2.4500           58.6
## 3038             Doniphan County, Kansas          2.3200           55.3
## 3039              Douglas County, Kansas          2.4300           39.5
## 3040              Edwards County, Kansas          2.2700           60.9
## 3041                  Elk County, Kansas          2.1000           60.3
## 3042                Ellis County, Kansas          2.3500           45.1
## 3043            Ellsworth County, Kansas          2.0800           51.0
## 3044               Finney County, Kansas          2.9000           52.6
## 3045                 Ford County, Kansas          3.0400           54.8
## 3046             Franklin County, Kansas          2.5600           58.8
## 3047                Geary County, Kansas          2.8300           59.5
##      PctNoHS18_24 PctHS18_24 PctSomeCol18_24 PctBachDeg18_24 PctHS25_Over
## 112          19.8       39.3              NA             1.4         35.0
## 113          20.2       35.5              NA             4.9         28.8
## 114          17.3       38.6              NA             5.0         24.7
## 115          19.0       33.7            42.3             5.1         26.8
## 116           1.2       62.7            36.1             0.0         43.2
## 117          48.1       19.2            32.7             0.0         35.8
## 118          31.9       40.2              NA             4.7         37.4
## 119          24.3       51.6              NA             3.3         37.5
## 120          30.1       38.4            30.7             0.8         32.1
## 121          30.2       36.7              NA             0.2         30.2
## 122           6.1       42.3            51.6             0.0         31.2
## 123          32.3       41.2              NA             3.3         35.6
## 124          38.0       28.9              NA             0.0         35.4
## 125          16.9       43.5              NA            13.7         29.5
## 126          15.9       28.7              NA             7.8         24.0
## 127          23.9       47.1              NA             4.3         34.5
## 128          17.4       33.7              NA             5.1         28.6
## 149          12.1       25.0            50.9            12.0         25.6
## 368          19.4       42.4              NA             8.0         39.9
## 369          15.9       32.3              NA             9.6         28.4
## 370          18.5       38.2            36.8             6.5         33.5
## 371          12.8       24.7              NA             6.9         26.1
## 372          12.6       27.0            52.4             8.0         32.1
## 568          13.0       31.0              NA            11.5         27.0
## 1014         10.7       31.2              NA             7.4         19.4
```

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## 1026          11.1        19.2              NA             9.5         17.7
## 1295           8.7        29.1              NA             6.3         37.7
## 1296          19.2        21.9              NA            17.9         32.7
## 1297          37.8        33.0              NA             0.0         28.9
## 1298          33.5        25.6              NA             4.5         25.6
## 1299           4.8         0.0              NA            40.3         30.3
## 1300           8.6        39.1            45.7             6.6         40.1
## 1301          25.1        38.7              NA             8.4         34.8
## 1302          17.1        44.7              NA             6.3         36.6
## 1303          13.0        23.7              NA            11.5         29.6
## 1304          38.0        36.7              NA             4.0         20.9
## 1305          24.5        34.3              NA             2.0         25.9
## 1306          23.4        30.5              NA             7.8         40.6
## 1307          16.0        37.6              NA             4.7         40.7
## 1308           6.3        24.6            44.0            25.1         39.4
## 1309          11.5        25.0              NA            17.1         15.2
## 1310          30.0        16.6              NA             3.5         23.4
## 1311          10.3        45.8              NA             2.3         34.8
## 1312           8.5        15.0              NA             6.5         26.9
## 1313          25.2        31.1              NA             3.0         29.7
## 1314          13.3        30.5              NA             8.1         30.9
## 1315          11.2        44.1              NA             1.8         32.3
## 1316          20.6        34.7              NA             0.9         37.2
## 1317          27.5        21.3            50.2             0.9         35.5
## 1318           9.3        23.6              NA             7.7         33.4
## 1319          15.9        21.6              NA            11.3         29.1
## 1320          15.2        20.9            55.8             8.1         36.4
## 1321          16.9        28.9            47.3             6.9         44.8
## 1322          28.1        44.5              NA             1.2         31.1
## 1323          14.5        36.6              NA             5.3         32.5
## 1324          16.5        40.7              NA             4.2         34.0
## 1325          17.3        31.6              NA             3.9         32.1
## 1326          20.8        36.6              NA             6.3         35.7
## 1327          21.1        51.0            21.7             6.2         32.5
## 1328          13.6        42.0              NA            10.0         41.9
## 1329           9.4        20.7              NA             4.7         33.6
## 1330          31.1        27.4              NA            17.8         35.9
## 1331          25.1        18.9            41.3            14.7         34.6
## 1332          15.7        33.8              NA             8.8         40.5
## 1333          18.0        22.0              NA            15.6         36.3
## 1334          17.1        36.5              NA             7.3         32.9
## 1335          26.0        23.2            49.6             1.2         28.0
## 1336          33.2        13.9            45.3             7.6         35.3
## 1337           9.2        35.0              NA             6.5         31.2
## 1338          11.9        37.3              NA             3.9         26.5
## 1339          29.1        28.5              NA             2.5         30.8
## 1340          20.2        32.7              NA             2.4         28.6
## 1341          20.2        23.6            43.4            12.7         35.1
## 1342          20.5        22.2              NA             4.6         30.5
## 1343           2.5        20.3              NA             8.3         17.4
## 1344          12.6        42.1              NA            12.6         36.8
## 1345          22.0        20.6            43.0            14.5         33.0
## 1346          25.2        31.0            40.6             3.2         32.8
## 1347          14.5        29.4              NA             6.2         33.5
```

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## 1348          21.0        18.3            48.3            12.3          33.4
## 1349          15.4        28.8              NA             8.5          26.8
## 1350          25.7        23.7              NA             2.7          24.8
## 1351          15.8        31.4              NA             7.5          31.1
## 1352           6.7        18.7              NA             8.2          33.8
## 1353          25.6        10.1              NA            10.5          33.3
## 1354          10.0        37.2              NA             4.8          35.3
## 1355          25.3        21.7              NA            10.7          28.7
## 1356          21.3        27.0              NA             3.5          27.4
## 1357          38.7        29.0              NA            14.8          35.6
## 1358          20.4        31.1              NA             5.0          35.9
## 1359          12.2        20.1              NA             3.8          28.9
## 1360           3.4        26.3              NA            14.8          33.2
## 1361          10.8        40.7            45.4             3.1          38.9
## 1362          25.6        22.2            38.9            13.3          32.9
## 1363          14.8        19.9              NA            20.4          38.0
## 1364          36.9        20.6              NA            16.3          29.6
## 1365          20.0        34.4              NA             9.0          36.8
## 1366           7.8        46.1            41.1             5.0          38.8
## 1367          24.7        33.7              NA             6.8          32.9
## 1486          11.2        24.9            53.6            10.2          24.1
## 1564          11.8        33.9              NA             9.3          23.5
## 1744           9.3        28.7              NA             9.1          35.3
## 1840          15.2        28.8              NA             8.8          17.5
## 1924          20.3        32.8              NA             7.4          24.3
## 2454          43.3        20.7              NA             6.1          42.4
## 2455           3.1        15.9              NA             7.0          28.1
## 2456           8.6        28.9              NA             5.3          37.6
## 2457          13.8        34.3              NA             3.9          36.4
## 2458          13.1        26.7            45.7            14.5          21.2
## 2459          18.0        44.2              NA             3.6          35.4
## 2460          22.7        29.7              NA             4.9          36.0
## 2461          19.1        37.8              NA             5.6          34.6
## 2462           5.2        24.4              NA             7.4          27.3
## 2463          20.8        37.4            35.6             6.1          38.1
## 2464          11.8        25.8              NA            11.5          25.1
## 2465          29.4        36.8            27.0             6.8          36.2
## 2466          12.8        29.2              NA             5.7          31.4
## 2467          13.4        30.2            43.0            13.4          21.6
## 2468          13.3        38.6              NA             7.0          33.5
## 2469          11.5        25.3              NA             9.1          29.9
## 2470          15.6        34.1              NA             6.0          39.9
## 2471          21.7        31.1              NA             5.9          35.7
## 2472          15.9        36.6            42.2             5.3          36.7
## 2473          14.8        36.9            38.9             9.4          33.0
## 2474          15.7        29.4            44.0            10.9          33.4
## 2475          12.1        22.5              NA            19.9          17.8
## 2476          11.8        30.3              NA             8.9          34.3
## 2477          19.9        42.5              NA             6.1          31.8
## 2478          13.1        42.5              NA             3.5          37.8
## 2479          14.7        27.1            52.7             5.5          31.8
## 2480          10.7        28.0              NA             7.9          34.8
## 2481          14.6        40.1              NA             4.5          39.7
## 2482          18.7        24.0              NA             8.4          27.9
```

```
## 2483          16.4        33.9              41.6              8.1          35.0
## 2484          18.8        34.7                NA              6.7          36.5
## 2485          23.3        33.7                NA              4.5          38.3
## 2486          13.3        41.9                NA              4.8          36.2
## 2487          12.9        62.5              18.8              5.8          44.8
## 2488          12.8        38.9                NA              8.7          35.5
## 2489          17.9        31.6                NA             11.3          40.5
## 2490           7.3        23.5              61.3              7.9          35.1
## 2491          15.1        27.8                NA              9.3          38.0
## 2492          27.5        41.0              26.8              4.7          37.1
## 2493          20.4        35.1              40.0              4.6          37.4
## 2494          19.6        29.7                NA              6.3          38.6
## 2495          20.2        37.2                NA              4.5          38.3
## 2496          18.4        33.4              38.6              9.6          38.3
## 2497          16.2        35.1              44.3              4.4          38.6
## 2498          27.4        23.4                NA              3.7          32.6
## 2499          18.9        32.6                NA              9.6          36.5
## 2500           3.8        14.8                NA              8.0          27.0
## 2501          41.1        29.3              24.9              4.7          34.3
## 2502          14.4        31.8              46.8              7.0          38.5
## 2503          14.0        27.3              42.1             16.6          20.9
## 2504          16.4        31.1                NA              9.5          30.5
## 2505          13.4        27.5              52.8              6.3          36.0
## 2506          14.8        40.7                NA              3.4          42.6
## 2507          22.5        31.1                NA              2.9          36.0
## 2508          14.9        26.5                NA              5.1          31.1
## 2509          20.2        32.3                NA              6.9          34.1
## 2510          12.7        25.0                NA             15.4          21.9
## 2511          12.9        34.9              43.5              8.6          40.9
## 2512          17.3        35.1                NA             10.0          37.9
## 2513          16.1        40.8              34.0              9.1          37.5
## 2514           8.8        18.6              69.0              3.7          31.8
## 2515          14.4        36.7                NA              6.7          38.5
## 2516          18.9        40.7              36.8              3.6          37.3
## 2517           9.0        21.7              59.4              9.9          29.5
## 2518          15.6        27.9                NA             14.9          23.4
## 2519          16.4        34.3                NA              7.0          26.6
## 2520          18.9        38.5                NA              4.9          40.8
## 2521           7.0        16.5                NA              7.6          30.2
## 2522          15.5        32.9                NA              9.1          35.5
## 2523           5.3        22.9                NA              5.2          27.2
## 2524          17.6        38.7                NA              6.8          38.6
## 2525          24.4        27.7              43.1              4.9          37.1
## 2526          10.3        13.3              59.1             17.2          34.8
## 2527          13.8        40.1              39.2              6.8          39.1
## 2528          22.3        27.7              46.1              3.9          39.3
## 2529          12.6        48.0              34.7              4.8          35.2
## 2530          13.6        28.9                NA             13.2          22.0
## 2531          24.0        40.1                NA              4.8          40.0
## 2532          16.1        28.6              48.2              7.0          30.5
## 2533           4.4        24.2                NA              6.9          29.6
## 2534          16.1        26.8                NA              9.2          28.9
## 2535          15.8        37.9                NA              4.9          36.8
## 3019           7.3        32.4              56.8              3.5          33.4
```

```
## 3020         12.7       30.5            50.1            6.7         39.1
## 3021          5.0       22.8              NA            8.7         41.0
## 3022         26.2       24.4              NA            4.3         36.6
## 3023         13.8       37.4              NA            4.4         33.9
## 3024         12.6       28.0              NA            3.9         31.2
## 3025         21.4       28.3              NA           13.5         39.8
## 3026         15.8       29.0              NA            7.3         26.8
## 3027         15.9       47.7              NA            6.8         33.5
## 3028         19.1       42.7            36.5            1.7         36.1
## 3029         21.4       18.5              NA           12.7         31.5
## 3030         19.6       33.1              NA           12.8         26.1
## 3031          7.7       26.5            50.5           15.2         33.7
## 3032         14.8       25.3              NA            2.7         34.2
## 3033         16.1       31.8              NA            5.9         36.8
## 3034         32.2       36.5            26.1            5.2         28.4
## 3035         12.8       32.3            46.0            8.9         30.5
## 3036         11.3       40.6              NA           18.1         37.6
## 3037         12.4       44.1              NA            4.7         36.0
## 3038          7.3       31.7              NA            4.1         38.7
## 3039          2.8       13.1              NA           13.9         20.0
## 3040         16.3       29.2              NA           14.4         30.7
## 3041          6.5       59.7              NA            4.8         35.3
## 3042          2.9       17.7              NA            9.8         27.7
## 3043         20.9       27.9              NA            8.4         32.2
## 3044         26.7       33.9            35.6            3.8         23.1
## 3045         19.7       44.5            33.3            2.5         23.0
## 3046         10.9       37.2              NA            4.1         36.1
## 3047          8.0       43.3            43.9            4.8         29.8
##      PctBachDeg25_Over PctEmployed16_Over PctUnemployed16_Over
## 112               10.9               48.4                 11.9
## 113               15.1               57.7                 10.8
## 114               16.4               51.5                  8.5
## 115               12.3               67.0                  5.5
## 116               12.6               46.0                 11.9
## 117               14.2               64.0                  4.7
## 118                8.8               64.5                  7.8
## 119                4.7               59.8                 12.0
## 120               15.9               41.0                 11.8
## 121               11.1               48.6                 13.6
## 122                6.8               48.1                 15.4
## 123                9.2               39.7                 13.4
## 124                7.5               36.9                  9.5
## 125               14.1               50.4                 10.3
## 126               18.2               59.6                  9.1
## 127                8.8               43.8                 10.6
## 128               12.8               52.9                 11.3
## 149               20.7               59.5                  9.4
## 368               10.8               47.8                  7.3
## 369               20.0               68.4                  6.2
## 370               15.6               61.5                  3.5
## 371               17.4               58.5                 10.6
## 372               15.2               66.0                  6.7
## 568               20.7                 NA                  7.5
## 1014              24.5               55.8                  8.3
```

```
## 1026                 19.2                 58.4                  8.0
## 1295                 17.4                 62.6                  1.9
## 1296                 20.0                 59.6                  2.4
## 1297                 14.0                 64.7                  7.3
## 1298                 14.3                 70.8                  2.9
## 1299                 20.4                 60.5                  2.1
## 1300                 11.3                 56.2                  3.5
## 1301                 11.1                 67.4                  2.3
## 1302                 13.0                 59.7                  3.7
## 1303                 17.3                 60.8                  4.4
## 1304                 11.2                 68.2                  3.9
## 1305                 18.4                 65.0                  2.5
## 1306                 12.5                 62.8                  4.4
## 1307                 12.7                 62.0                  6.9
## 1308                 11.3                 58.3                  2.5
## 1309                 33.6                 69.2                  4.5
## 1310                 10.5                 66.3                  1.8
## 1311                 14.8                 56.5                  5.7
## 1312                 17.9                   NA                  4.0
## 1313                 15.5                 67.9                  2.4
## 1314                 16.4                 54.7                  5.9
## 1315                 15.6                 59.5                  6.5
## 1316                 10.5                 52.1                  8.3
## 1317                 11.7                 63.0                  3.9
## 1318                 16.6                 62.7                  7.2
## 1319                 19.3                 66.0                  3.1
## 1320                 14.7                 58.4                  5.0
## 1321                 11.8                 62.1                  3.0
## 1322                 16.4                   NA                  2.8
## 1323                 16.5                 63.4                  5.6
## 1324                 18.0                 60.5                  2.6
## 1325                 11.2                 53.8                  8.7
## 1326                 10.0                 59.9                  3.2
## 1327                 10.6                 57.1                  5.8
## 1328                 16.8                 67.1                  1.7
## 1329                 12.1                 60.9                  4.7
## 1330                 15.5                 60.9                  2.7
## 1331                 15.2                 57.0                  1.7
## 1332                 12.8                 57.3                  8.2
## 1333                 15.1                 61.1                  4.0
## 1334                 15.2                 63.2                  5.3
## 1335                 12.7                 51.6                  1.9
## 1336                 15.5                 63.1                  4.3
## 1337                 21.2                 64.8                  3.7
## 1338                 18.0                 59.9                  5.6
## 1339                 18.6                 58.2                  2.3
## 1340                 13.8                 58.2                  5.7
## 1341                 13.4                 61.8                  3.8
## 1342                 14.0                 61.9                  5.5
## 1343                 24.1                 54.5                  5.8
## 1344                 14.1                 63.2                  4.1
## 1345                 12.8                 59.7                  5.6
## 1346                 13.1                 60.7                  6.9
## 1347                 15.2                 65.0                  5.0
```

## 1348	15.7	67.5	5.8
## 1349	19.7	61.9	6.9
## 1350	8.5	66.2	9.0
## 1351	18.7	60.2	6.8
## 1352	15.9	65.1	1.2
## 1353	9.8	64.3	4.0
## 1354	13.0	59.4	3.2
## 1355	17.0	62.1	2.6
## 1356	16.4	71.0	2.4
## 1357	12.7	64.4	3.0
## 1358	14.1	58.2	7.0
## 1359	18.6	68.9	2.7
## 1360	18.5	69.6	1.0
## 1361	16.1	60.9	6.2
## 1362	19.6	NA	5.4
## 1363	13.2	64.5	3.1
## 1364	12.5	67.4	3.1
## 1365	9.9	56.2	6.5
## 1366	12.7	59.7	4.6
## 1367	10.7	58.7	11.2
## 1486	23.6	59.4	9.4
## 1564	21.5	59.2	8.3
## 1744	17.2	59.2	7.3
## 1840	28.0	63.7	5.1
## 1924	21.7	NA	6.1
## 2454	13.4	57.6	3.3
## 2455	21.6	68.0	4.9
## 2456	15.3	66.2	3.2
## 2457	16.8	58.7	5.4
## 2458	32.0	73.2	3.8
## 2459	14.2	52.6	7.4
## 2460	11.8	65.6	2.6
## 2461	15.6	64.7	5.5
## 2462	22.8	68.8	4.3
## 2463	11.1	53.2	7.4
## 2464	22.3	62.0	4.0
## 2465	13.9	59.2	4.9
## 2466	15.6	57.9	5.7
## 2467	27.8	NA	5.0
## 2468	18.1	71.4	3.5
## 2469	17.8	63.8	4.5
## 2470	12.8	61.5	4.2
## 2471	13.8	64.5	4.3
## 2472	11.5	61.5	4.9
## 2473	16.8	63.9	5.3
## 2474	14.6	61.1	3.6
## 2475	30.3	67.9	6.0
## 2476	14.9	64.4	4.9
## 2477	16.7	56.6	5.0
## 2478	12.8	NA	7.3
## 2479	15.1	54.2	7.1
## 2480	14.2	66.0	3.2
## 2481	8.0	56.3	9.8
## 2482	15.1	64.9	4.8

```
## 2483                16.8                60.3                    2.8
## 2484                13.5                54.4                    7.8
## 2485                13.6                60.8                    3.7
## 2486                15.5                54.0                    4.8
## 2487                12.4                59.9                    4.8
## 2488                15.4                66.9                    5.3
## 2489                15.8                63.9                    2.8
## 2490                18.6                69.0                    5.3
## 2491                12.9                66.7                    4.5
## 2492                 9.8                56.2                    9.2
## 2493                14.5                62.8                    4.7
## 2494                15.1                62.5                    3.5
## 2495                13.6                63.6                    4.7
## 2496                10.0                58.4                    7.7
## 2497                11.6                63.6                    5.8
## 2498                13.8                62.5                    6.5
## 2499                13.0                61.1                    4.5
## 2500                22.3                70.4                    4.0
## 2501                10.1                63.0                    6.9
## 2502                12.4                57.9                    5.1
## 2503                23.8                69.3                    4.1
## 2504                17.2                59.3                    4.4
## 2505                11.8                68.5                    3.0
## 2506                 9.1                53.0                    7.4
## 2507                14.0                62.8                    4.2
## 2508                16.3                63.9                    4.6
## 2509                16.1                60.7                    4.1
## 2510                24.4                63.9                    7.1
## 2511                11.8                65.8                    3.5
## 2512                13.0                61.8                    4.0
## 2513                12.2                62.1                    5.0
## 2514                17.6                  NA                    5.6
## 2515                15.0                63.5                    3.7
## 2516                14.2                69.1                    2.7
## 2517                18.2                  NA                    6.9
## 2518                28.1                73.2                    4.6
## 2519                19.2                69.6                    5.2
## 2520                12.8                66.8                    5.5
## 2521                17.7                68.8                    5.0
## 2522                18.7                65.2                    4.9
## 2523                20.1                63.6                    3.1
## 2524                12.6                63.2                    3.9
## 2525                11.0                59.6                    5.1
## 2526                13.3                57.4                    2.9
## 2527                14.6                  NA                    3.6
## 2528                 8.8                54.2                    5.2
## 2529                15.4                63.4                    4.6
## 2530                27.3                  NA                    4.8
## 2531                12.5                66.1                    2.9
## 2532                13.5                64.6                    2.0
## 2533                18.5                66.0                    6.2
## 2534                20.4                71.2                    5.2
## 2535                12.1                63.6                    3.4
## 3019                12.2                56.7                    7.0
```

```
## 3020               10.5                59.0                 5.9
## 3021               12.7                57.3                 7.3
## 3022               11.7                62.1                 3.1
## 3023               12.4                61.4                 6.8
## 3024               13.9                57.0                 3.3
## 3025               12.1                60.3                 4.5
## 3026               18.6                61.6                 5.6
## 3027               16.5                54.1                 2.9
## 3028               13.2                52.7                 5.1
## 3029               16.9                59.7                 1.9
## 3030               23.5                61.8                 1.4
## 3031               16.0                63.2                 1.9
## 3032               10.6                58.9                 6.8
## 3033               15.6                62.1                 5.1
## 3034               17.2                63.2                 5.4
## 3035               12.7                55.4                 7.0
## 3036               18.5                57.1                 3.8
## 3037               13.6                58.1                 6.7
## 3038               11.3                59.5                 5.8
## 3039               26.3                  NA                 6.0
## 3040               15.0                61.3                 2.0
## 3041               11.8                50.7                 5.3
## 3042               21.9                68.6                 4.5
## 3043               15.2                51.7                 4.3
## 3044               12.4                70.1                 4.6
## 3045               12.8                64.8                 6.4
## 3046               14.4                  NA                 6.9
## 3047               13.7                48.8                 9.2
##      PctPrivateCoverage PctEmpPrivCoverage PctPublicCoverage PctWhite
## 112                63.0               34.9              37.0 81.84067
## 113                62.9               45.4              27.3 63.75048
## 114                70.7               39.6              35.8 89.15127
## 115                73.0               60.9              18.5 88.13661
## 116                56.5               34.9              37.1 87.37949
## 117                76.4               52.6              18.6 95.80587
## 118                69.4               53.9              20.6 87.06275
## 119                69.1               53.7              24.4 88.44601
## 120                64.1               48.5              31.5 90.64305
## 121                61.1               38.6              37.5 85.73669
## 122                58.1               36.4              43.2 66.68857
## 123                53.1               30.2              48.2 85.66334
## 124                59.9               38.1              34.7 86.35823
## 125                68.5               40.6              34.1 94.24790
## 126                65.4               45.7              28.1 80.45764
## 127                67.6               48.4              31.9 86.56507
## 128                61.3               41.5              35.6 82.83653
## 149                73.1               55.9              27.4 62.92611
## 368                66.3               32.5              51.5 95.07545
## 369                79.3               60.6              25.7 85.66465
## 370                66.7               41.0              38.4 87.75726
## 371                58.6               39.6              40.5 74.08989
## 372                71.5               51.3              32.2 94.31427
## 568                64.2               43.6              33.7 58.62655
## 1014               78.2               53.6              27.6 83.64393
```

```
## 1026                  63.2                 39.7                 31.9 74.28381
## 1295                  74.7                 35.1                 32.3 96.89214
## 1296                  77.0                 37.2                 38.8 91.90127
## 1297                  62.3                 40.6                 25.6 75.42221
## 1298                  76.1                 48.4                 22.1 98.35120
## 1299                  81.9                 42.7                 28.8 87.17320
## 1300                  69.4                 40.5                 38.0 95.36994
## 1301                  58.9                 35.7                 31.1 87.97370
## 1302                  71.7                 44.5                 32.8 96.21225
## 1303                  75.1                 51.2                 29.9 92.91517
## 1304                  62.4                 41.4                 27.5 85.76271
## 1305                  79.2                 47.0                 28.2 96.02888
## 1306                  77.7                 52.6                 31.0 87.61940
## 1307                  77.6                 54.2                 29.1 95.68737
## 1308                  74.8                 31.9                 41.5 97.13627
## 1309                  84.0                 63.0                 18.9 86.91211
## 1310                  77.5                 54.8                 21.4 83.65385
## 1311                  71.5                 43.3                 32.0 97.18870
## 1312                  73.1                 43.7                 34.5 95.46530
## 1313                  78.2                 48.6                 29.2 98.32736
## 1314                  80.2                 42.7                 26.7 83.88536
## 1315                  70.8                 40.8                 33.0 97.52695
## 1316                  75.0                 44.8                 32.3 96.30563
## 1317                  79.1                 44.8                 33.5 95.41711
## 1318                  67.3                 46.4                 29.5 88.18660
## 1319                  80.7                 56.0                 27.8 94.78326
## 1320                  74.9                 49.1                 33.4 95.76892
## 1321                  77.7                 48.1                 32.6 97.08146
## 1322                  76.1                 49.8                 27.2 88.31850
## 1323                  81.1                 56.0                 24.5 95.58248
## 1324                  79.5                 47.3                 27.6 97.87166
## 1325                  64.2                 42.8                 36.8 85.46396
## 1326                  75.9                 42.4                 34.6 96.29565
## 1327                  70.9                 49.6                 30.1 85.83387
## 1328                  80.4                 50.2                 28.0 97.19461
## 1329                  67.8                 46.2                 35.0 94.60513
## 1330                  77.2                 42.6                 35.5 96.88008
## 1331                  72.8                 45.9                 32.9 92.20036
## 1332                  71.9                 44.9                 35.2 96.31841
## 1333                  74.6                 38.9                 34.8 97.67319
## 1334                  77.8                 50.8                 27.9 96.80886
## 1335                  72.8                 42.1                 32.8 90.65258
## 1336                  75.8                 44.5                 33.4 96.85512
## 1337                  80.4                 52.1                 23.8 94.08619
## 1338                  71.8                 47.0                 32.1 95.03029
## 1339                  77.6                 40.8                 35.1 97.40668
## 1340                  69.7                 46.3                 32.5 91.39686
## 1341                  74.7                 42.0                 36.9 97.66958
## 1342                  70.1                 47.4                 30.5 90.37348
## 1343                  85.4                 50.6                 16.4 83.26091
## 1344                  71.5                 40.8                 35.5 96.81836
## 1345                  75.2                 45.4                 33.5 98.14698
## 1346                  70.5                 34.1                 39.3 95.43503
## 1347                  70.9                 47.3                 29.1 87.64152
```

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## 1348                    84.1                   50.8                  24.7 95.23133
## 1349                    69.2                   50.3                  28.0 79.56247
## 1350                    61.5                   49.0                  26.0 59.37957
## 1351                    71.7                   48.5                  31.9 82.79565
## 1352                    73.4                   31.6                  37.6 97.90597
## 1353                    65.3                   39.5                  36.7 92.76511
## 1354                    76.0                   31.2                  39.1 97.48663
## 1355                    64.7                   38.9                  36.8 95.57870
## 1356                    76.6                   52.0                  23.8 75.10470
## 1357                    69.7                   45.1                  25.2 84.85793
## 1358                    72.7                   50.5                  30.8 94.37770
## 1359                    81.0                   48.3                  24.7 94.47319
## 1360                    83.3                   47.2                  26.8 95.62860
## 1361                    80.9                   55.2                  25.7 96.39846
## 1362                    75.3                   40.2                  26.8 99.49843
## 1363                    74.4                   44.7                  33.9 97.22125
## 1364                    71.7                   32.8                  33.2 94.32849
## 1365                    60.1                   37.3                  40.0 94.62532
## 1366                    63.1                   35.8                  38.5 94.67456
## 1367                    51.4                   36.8                  35.3 61.71101
## 1486                    67.8                   47.7                  26.3 79.60951
## 1564                    75.3                   51.8                  28.3 89.27146
## 1744                    77.1                   54.2                  30.1 86.47569
## 1840                    74.0                   60.0                  17.3 52.50672
## 1924                    68.4                   51.8                  23.3 86.40591
## 2454                    76.1                   35.3                  38.7 98.03272
## 2455                    79.5                   56.3                  26.5 92.06910
## 2456                    81.5                   52.1                  30.6 97.36915
## 2457                    73.1                   53.1                  34.1 89.65381
## 2458                    87.5                   68.6                  17.0 93.04707
## 2459                    61.7                   31.9                  49.5 85.19233
## 2460                    68.5                   40.2                  39.5 93.87856
## 2461                    80.1                   58.9                  27.0 95.46012
## 2462                    78.8                   57.8                  26.5 92.60500
## 2463                    57.6                   34.5                  45.2 86.76874
## 2464                    73.9                   42.9                  38.6 86.98498
## 2465                    70.6                   36.5                  43.5 90.85282
## 2466                    70.1                   42.4                  41.1 96.52963
## 2467                    82.2                   63.7                  22.7 84.13195
## 2468                    81.8                   60.1                  24.7 97.25481
## 2469                    77.9                   46.3                  35.2 97.72256
## 2470                    72.1                   42.1                  39.6 97.65987
## 2471                    74.8                   46.5                  33.2 98.26321
## 2472                    70.3                   43.6                  39.0 95.12574
## 2473                    77.2                   51.6                  31.3 95.17002
## 2474                    73.5                   38.6                  41.2 97.53397
## 2475                    75.4                   56.1                  27.3 74.27382
## 2476                    76.7                   50.6                  34.2 97.24644
## 2477                    67.9                   36.7                  44.9 94.52707
## 2478                    75.0                   54.7                  31.1 95.76457
## 2479                    69.6                   43.2                  40.6 93.05905
## 2480                    80.4                   47.7                  32.2 95.34815
## 2481                    64.6                   39.9                  44.5 96.78810
## 2482                    70.7                   44.6                  36.1 90.42739
```

```
## 2483                  73.8                 41.5                 36.5 98.10268
## 2484                  62.3                 37.3                 47.5 93.71840
## 2485                  78.6                 38.5                 38.4 96.95287
## 2486                  71.9                 44.3                 42.5 97.03256
## 2487                  69.4                 41.1                 40.1 94.27703
## 2488                  78.7                 56.1                 29.6 95.36579
## 2489                  78.6                 45.0                 33.7 97.21074
## 2490                  76.7                 51.4                 29.5 89.67664
## 2491                  77.3                 52.5                 32.1 95.90246
## 2492                  47.9                 27.7                 48.3 48.76274
## 2493                  76.8                 46.4                 32.1 97.56691
## 2494                  72.5                 42.8                 38.8 97.57740
## 2495                  75.7                 49.8                 32.6 97.32803
## 2496                  69.7                 44.7                 38.4 91.26661
## 2497                  71.3                 44.5                 37.6 97.19981
## 2498                  73.4                 49.0                 35.0 92.21710
## 2499                  76.2                 40.6                 36.3 96.72881
## 2500                  80.7                 57.5                 28.0 93.60757
## 2501                  67.3                 42.5                 33.3 80.98400
## 2502                  70.3                 39.2                 40.5 93.21578
## 2503                  80.4                 60.9                 26.4 85.58856
## 2504                  74.7                 44.1                 38.3 95.89644
## 2505                  75.5                 52.1                 33.9 93.75620
## 2506                  68.4                 42.1                 40.4 91.61134
## 2507                  69.1                 37.0                 37.8 93.60701
## 2508                  72.5                 46.4                 34.5 92.85194
## 2509                  76.8                 43.2                 37.6 97.52466
## 2510                  68.8                 50.6                 33.6 69.12484
## 2511                  72.9                 49.0                 36.0 94.97661
## 2512                  71.6                 39.4                 36.5 89.44222
## 2513                  76.2                 43.1                 35.0 94.04785
## 2514                  78.4                 54.9                 25.9 89.99322
## 2515                  73.8                 44.4                 34.2 96.60148
## 2516                  80.4                 55.1                 29.6 93.61511
## 2517                  74.0                 49.1                 35.3 92.66955
## 2518                  85.5                 68.0                 16.8 85.67236
## 2519                  82.3                 64.5                 22.3 93.96467
## 2520                  76.6                 50.3                 32.2 96.77784
## 2521                  77.9                 54.7                 28.6 91.04165
## 2522                  76.1                 54.6                 32.1 91.33149
## 2523                  84.2                 52.3                 27.8 93.11227
## 2524                  72.0                 42.4                 38.6 95.91601
## 2525                  66.1                 41.1                 37.3 95.40996
## 2526                  75.8                 38.4                 41.7 92.44678
## 2527                  77.8                 49.0                 34.1 97.56793
## 2528                  62.5                 34.6                 47.7 96.39509
## 2529                  77.0                 52.0                 31.6 93.69889
## 2530                  85.7                 65.1                 21.2 87.00855
## 2531                  69.4                 41.7                 34.5 94.13787
## 2532                  79.1                 49.2                 30.4 96.70549
## 2533                  78.2                 51.5                 26.7 94.12063
## 2534                  81.3                 62.1                 23.3 94.56372
## 2535                  74.5                 42.0                 35.0 92.58819
## 3019                  66.0                 42.7                 37.7 93.46380
```

```
## 3020               67.7               33.9              37.6 95.14944
## 3021               69.3               46.0              32.0 90.57296
## 3022               73.8               40.3              34.3 95.95388
## 3023               66.2               42.4              34.0 91.89021
## 3024               65.8               43.8              37.0 93.07994
## 3025               66.7               41.0              37.9 86.00202
## 3026               76.6               55.1              26.5 93.56654
## 3027               72.9               44.3              35.3 95.77517
## 3028               62.5               34.2              43.2 88.38068
## 3029               79.7               39.3              33.5 94.70544
## 3030               75.3               52.4              29.5 91.65501
## 3031               80.2               43.3              33.8 96.71060
## 3032               71.6               41.7              34.4 94.96734
## 3033               73.0               50.2              32.1 96.16931
## 3034               74.6               43.9              32.2 97.96020
## 3035               69.0               46.2              34.4 87.71862
## 3036               67.8               35.6              40.0 96.52324
## 3037               74.0               42.3              34.5 94.50195
## 3038               69.8               45.7              29.5 91.72923
## 3039               79.3               55.3              19.6 84.29288
## 3040               68.1               39.4              30.6 93.78134
## 3041               66.0               36.2              45.5 94.37197
## 3042               80.0               52.9              24.3 94.29173
## 3043               78.3               44.6              31.7 90.28081
## 3044               64.5               48.6              28.8 75.70625
## 3045               62.0               47.8              26.6 87.96163
## 3046               75.9               49.6              29.5 92.90568
## 3047               76.1               22.9              25.1 70.09813
##          PctBlack    PctAsian PctOtherRace PctMarriedHouseholds BirthRate
## 112   2.37093848  2.66782121   3.64506020             49.69921  7.724034
## 113  10.83685568  9.16975671  10.14589511             43.81307  5.125073
## 114   0.55439176  1.30557143   3.49986246             56.13530  5.193754
## 115   1.28970948  0.92703929   2.56196424             57.82098  6.700734
## 116   0.00000000  0.00000000   7.97546012             40.57971  4.326923
## 117   0.11983223  0.00000000   1.43798682             56.06258  2.412869
## 118   0.45116306  0.31640007   4.37100838             51.35794  5.517423
## 119   0.13454423  0.80726539   2.37134208             56.90634 11.631799
## 120   2.92645360  0.07701194   0.90489026             59.21402  4.519774
## 121   0.93694949  1.30669609   5.42617651             51.96681  4.629630
## 122   1.31406045  4.09548839   4.35830048             34.42211  9.518477
## 123   2.56422287  1.43108504   5.15894428             52.18339  6.302577
## 124   4.81999405  0.16364177   2.91579887             51.41623 14.621131
## 125   0.43268007  1.45075083   0.20361415             52.23543  1.178203
## 126   2.40633168  5.30988302   5.80572343             45.20184  5.642579
## 127   4.17084419  0.74192901   0.92239823             53.24757  5.470460
## 128   0.96545648  2.98814287   7.25010095             42.93785  4.262413
## 149  20.14710490 10.07800936   4.85532614             49.81309  4.725836
## 368   0.36618473  0.30936296   0.08207589             53.34472  7.867412
## 369   4.90134725  4.08927749   1.69409973             56.43372  6.191393
## 370   0.51602390  0.46472328   0.37419277             54.03333  5.235358
## 371   0.81877008  0.87159396   0.26191839             44.60243  6.561705
## 372   2.32528492  1.13204661   0.11728411             48.05527  7.207015
## 568  35.70146211  2.08854616   1.11278149             40.67557  5.116648
## 1014  1.41503768  6.68013542   2.91853227             56.72986  4.433235
```

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## 1026  2.00229437  5.16301480  13.26786739             48.71595  4.603274
## 1295  0.98720292  0.54844607   0.14625229             62.43697  8.951965
## 1296  3.08522946  1.19552642   0.00000000             53.28893 10.810811
## 1297  0.01279427  0.00000000  22.14687820             64.27780  5.375140
## 1298  0.00000000  0.13190437   1.07172300             64.88372  6.199262
## 1299  0.89869281  0.32679739   8.90522876             64.68172  5.687204
## 1300  0.15642109  0.04692633   0.86031597             49.75212  5.457746
## 1301  2.08816705  0.00000000   7.73395205             57.01403  6.605505
## 1302  0.15355741  0.05118580   0.58010578             51.95232  7.601185
## 1303  1.63628534  0.68035022   1.80565523             57.58044  5.858531
## 1304  0.00000000  0.94430993  10.12106538             63.94265  5.965293
## 1305  0.00000000  2.37235688   0.00000000             61.28237  9.393939
## 1306  0.67164179  0.48507463   0.04477612             58.75781  5.896980
## 1307  0.47624087  0.02116626   0.13228913             60.96526  5.155718
## 1308  0.06583279  0.59249506   0.49374588             54.78018  6.681034
## 1309  4.48877410  4.46019329   0.91829066             55.46135  5.529393
## 1310  0.86032389  0.27834008  10.95647773             64.97462  5.231144
## 1311  0.14120668  0.00000000   0.07702182             55.25615  7.676768
## 1312  0.86750789  0.67034700   0.51261830             56.00375  3.783784
## 1313  0.35842294  0.00000000   0.00000000             47.82609 10.029499
## 1314  8.46255129  1.57490381   1.12748795             56.92975  5.174511
## 1315  0.82435003  0.34876347   0.00000000             49.88764  7.180385
## 1316  0.69269521  0.34634761   0.15743073             54.47154  7.603802
## 1317  0.00000000  0.17901898   0.46544934             51.64924  7.558140
## 1318  2.53720638  2.04112127   3.05719921             44.49216  7.999081
## 1319  1.04608232  0.68029536   0.99480377             56.52616  6.078626
## 1320  0.81366965  0.18714402   0.17087063             57.88270  6.021595
## 1321  0.28985507  0.28985507   0.38980510             55.71495  6.352683
## 1322  0.84417066  1.04950947   8.16792151             61.09799 12.219731
## 1323  1.33688204  0.37934410   0.21720509             56.81529  6.683134
## 1324  0.38119441  0.69885642   0.14294790             55.30331  2.550091
## 1325  5.11642874  0.91855839   0.43587643             47.39859  6.411140
## 1326  0.15652174  0.40000000   0.71304348             59.43475  5.611776
## 1327  0.93367676  0.16097875   7.24404379             52.56518  3.291536
## 1328  0.88591397  0.24608721   0.14765233             56.80585  5.558363
## 1329  1.16909213  0.19484869   0.44449857             52.01919  8.276060
## 1330  0.51998700  0.00000000   1.52746181             57.19450  9.725159
## 1331  2.45080501  0.35778175   1.21645796             53.79896  9.776833
## 1332  0.14925373  0.16791045   0.16791045             55.15757  4.447806
## 1333  0.39661555  1.05764146   0.10576415             50.90703  4.141104
## 1334  0.29761905  0.00000000   0.41335979             58.52387  1.470588
## 1335  4.84734481  0.00000000   1.62060483             45.76803  1.121657
## 1336  0.38174877  0.18178513   0.16360662             55.04470  9.342231
## 1337  1.29060774  0.90165746   0.68508287             62.60986  8.095893
## 1338  0.71875963  0.01026800   0.60581169             52.74218  5.278450
## 1339  0.35363458  0.11787819   0.47151277             53.38284 10.287081
## 1340  2.98011177  0.56511287   1.67660558             52.29310  5.263956
## 1341  0.14565127  0.58260508   0.00000000             48.87912  7.552083
## 1342  1.80746954  0.48931496   4.05432395             55.39809  5.697731
## 1343  6.55274453  4.50934393   1.11167391             43.09140  4.808995
## 1344  0.23139221  0.57848052   0.55919784             51.17860  5.273834
## 1345  0.00000000  0.00000000   0.06281407             49.39435 10.758377
## 1346  1.24499141  0.00000000   0.01431025             52.20747 10.703125
## 1347  3.20983224  2.48138513   3.19368440             46.41804  6.843610
```

```
## 1348  0.00000000  1.05519480  2.82061688             56.83060  6.629834
## 1349  9.22197939  4.26273718  2.15051853             47.48265  6.454934
## 1350  3.74667010  2.94749506 29.93039443             46.64439  6.872294
## 1351  7.87395409  1.13651617  1.92402345             46.64696  5.852417
## 1352  0.07902015  0.00000000  0.15804030             56.66372  7.382550
## 1353  1.43706640  0.00000000  3.76610506             43.57502  7.904412
## 1354  0.42780749  0.16042781  0.05347594             56.26875  8.463950
## 1355  0.97222222  0.43981482  1.57407407             59.25307  6.165919
## 1356  1.02373197  0.60493253 17.21731038             59.39024 13.963964
## 1357  0.55440055  0.27720028 12.21413721             71.40010  4.250386
## 1358  0.89263051  0.22421525  0.72341146             55.02145  6.593634
## 1359  1.86750789  0.08832808  1.38801262             53.81222  5.794872
## 1360  0.30498136  0.40664182  0.71162318             59.37020  4.642857
## 1361  0.22866943  0.24296127  0.17150207             60.19490  4.111601
## 1362  0.00000000  0.06269592  0.00000000             57.44000  8.333333
## 1363  0.75624340  0.17587056  0.28139289             57.33006  5.961538
## 1364  0.00000000  0.31760436  2.90381125             57.49040  7.061503
## 1365  0.15450833  0.62906964  0.68425119             49.88060  6.210826
## 1366  0.52943008  0.15571473  0.31142946             44.93795  6.818182
## 1367 24.28018855  3.45322936  6.45311742             38.97061  6.377617
## 1486 11.57916158  4.15506258  1.69682585             50.37633  4.236256
## 1564  0.91285391  4.08768533  1.52655878             54.65082  5.072390
## 1744  5.04145306  2.74951939  2.40007209             53.42832  4.239802
## 1840 20.84468147 18.38740694  5.41566476             65.81954  5.338508
## 1924  3.54347316  2.51320172  3.71657786             58.84968  6.062214
## 2454  0.19477990  0.07791196  0.11686794             56.35408  7.093822
## 2455  3.10786948  2.03147793  0.42840691             46.24301  4.611181
## 2456  0.44897798  0.43322437  0.74435824             52.52364  5.656722
## 2457  1.23860847  0.58403634  0.15800017             51.24645  5.169122
## 2458  1.18790158  2.52207073  0.60701039             64.90515  5.473379
## 2459  0.36116273  0.49791367  0.12623164             54.46484  7.941812
## 2460  0.81454665  0.24683232  0.97087379             53.27641  8.914100
## 2461  1.16283390  0.75602779  0.44767248             60.30392  5.001246
## 2462  2.00561770  1.15310698  0.57655349             51.69798  6.780929
## 2463  0.25137111  0.42276051  0.04570384             55.39300  7.495430
## 2464  0.90489026  0.92414324  1.25144397             53.31825  2.465166
## 2465  0.61898212  2.73383769  3.71389271             53.63047  8.062361
## 2466  0.63919553  0.50279152  0.06661591             52.53935  6.153361
## 2467  5.21671857  4.56524081  2.65952759             54.81702  5.401030
## 2468  0.53721045  0.47313948  0.35978314             59.42298  6.386702
## 2469  0.57618788  0.24303659  0.17476789             56.35324  6.190278
## 2470  0.35839775  0.41461701  0.40056219             52.24349  3.506787
## 2471  0.40781078  0.38861968  0.19670873             55.92545  5.655207
## 2472  1.12955950  1.30757031  1.07453798             49.27269  5.846509
## 2473  1.11262048  0.57140393  0.28031136             54.15846  6.136245
## 2474  0.00000000  0.30196276  0.36906559             55.41502  8.227848
## 2475 12.16571379  6.79642938  2.53010580             43.89530  5.881342
## 2476  0.30299809  0.22326175  0.15415692             55.63023  3.366022
## 2477  0.55409740  0.54437640  0.42286381             58.75726  3.229308
## 2478  0.58230625  0.74420305  0.41518697             55.03236  5.876217
## 2479  0.48948274  0.39026326  0.27340477             55.68152  6.184256
## 2480  0.19586720  2.47772011  1.28293017             54.91502  7.996051
## 2481  0.43116916  0.33118790  0.13747422             54.82152  4.499230
## 2482  2.91678447  0.65262464  4.02648195             55.81103  5.730235
```

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## 2483  0.60267857  0.20089286  0.08928571              51.67364  6.869221
## 2484  0.88095603  0.64348092  0.01532097              49.86311  3.367670
## 2485  0.62651289  0.81161897  0.12815036              55.75049  6.786942
## 2486  0.11162791  0.00000000  0.44651163              54.17731  7.011070
## 2487  0.58242593  0.91162320  0.00000000              51.32471  5.924855
## 2488  0.59190818  0.48363229  1.94535677              57.73595  7.140457
## 2489  0.37878788  0.15495868  1.13636364              54.22507  5.539070
## 2490  2.92618390  3.33086890  2.84057745              50.33139  5.799294
## 2491  0.37452145  0.62142818  1.46202075              53.36392  7.114267
## 2492  0.56404658  0.43668122  0.70960699              44.27786  8.348624
## 2493  0.26446631  0.19041574  0.32793822              54.68090  6.110202
## 2494  0.34889435  0.54054054  0.26535626              50.45861  7.700101
## 2495  0.43668122  0.41938692  0.23779670              57.37955  6.093113
## 2496  0.57344337  0.44170638  0.25572475              50.55744  6.653151
## 2497  0.54304957  0.50361022  0.26090650              55.11534  5.734926
## 2498  3.02342774  2.02411604  0.87949626              50.11345  6.166646
## 2499  0.35174112  0.43381405  0.62140931              55.47230  6.466069
## 2500  2.43607568  1.47796651  0.95810917              52.82287  5.329918
## 2501  3.98395352  5.75921059  7.20247153              53.92757  7.867172
## 2502  0.50806934  0.40346683  0.94142259              54.91202  6.289308
## 2503  5.10636295  5.86408132  0.79671364              53.62614  5.827671
## 2504  1.22585245  0.60510163  0.65204917              57.03768  7.511606
## 2505  1.65839830  0.83628632  0.29057406              45.21959  5.893846
## 2506  2.13224724  0.53734000  0.70504484              50.62935  4.865650
## 2507  1.25080180  0.40624332  1.26149241              52.63819  5.622271
## 2508  1.15700384  0.83367674  1.53421878              51.04928  7.867590
## 2509  0.54804531  0.35622945  0.44757033              56.62300  8.178625
## 2510 11.14671480 13.25095609  1.86988895              41.77379  6.136246
## 2511  0.66486087  0.27086924  0.91110564              54.60566 10.141207
## 2512  0.71233225  3.28181645  0.40068689              51.81544  5.744392
## 2513  0.75802518  0.58005405  2.76843979              54.09241  5.738255
## 2514  3.83595845  2.27784114  1.91566748              54.56684  4.613271
## 2515  0.53330545  0.93067029  0.35553696              56.98651 11.041340
## 2516  0.68523855  2.67050913  0.23695165              56.07787  6.330670
## 2517  1.54658714  1.03039310  0.21395869              45.37229  4.901104
## 2518  2.94126214  5.92039149  1.58022749              64.00598  6.064706
## 2519  1.97342950  1.20573887  0.25552815              62.64473  6.543533
## 2520  0.39944078  0.62579056  1.03854604              56.65115  5.582446
## 2521  3.74651856  1.89783414  1.19269963              51.70872  4.490661
## 2522  2.55181666  1.12805629  3.16786682              53.89251  6.135047
## 2523  0.77781189  1.86265480  0.90062430              53.92585  6.221294
## 2524  1.63779528  0.16797900  1.37532808              52.02080  9.562842
## 2525  0.28611134  0.42099240  1.92103327              55.95081  7.800673
## 2526  0.49577136  0.00000000  0.26246719              57.34908  4.967949
## 2527  0.16837379  0.35077873  0.28997708              57.73484  5.142332
## 2528  0.95210408  0.58143760  0.18169925              47.68200  5.574779
## 2529  2.78360243  0.76011743  0.79157056              56.88737  6.458604
## 2530  3.84075891  5.16925447  0.75809786              59.14859  5.104712
## 2531  0.59706893  1.14890537  2.66871721              50.04494  3.175334
## 2532  0.32178976  0.22984983  0.03064664              51.90922  7.810107
## 2533  1.43127721  2.55403901  0.44519946              49.48605  4.802427
## 2534  1.01327987  1.01949631  1.01871926              62.21363  6.296560
## 2535  0.45580658  0.59453032  1.39714625              56.38704  7.744283
## 3019  1.70476263  0.51219326  0.59628469              48.20957  8.708822
```

```
## 3020  0.11398176  0.00000000   0.00000000            55.73171  8.419023
## 3021  4.09427043  0.33668009   0.40281368            47.10757  6.012885
## 3022  0.33542977  0.46121593   0.25157233            57.39525  8.417508
## 3023  1.70079200  0.17883864   3.93080039            50.09729  7.120636
## 3024  3.52416959  0.87091547   0.14852822            52.63251 12.159893
## 3025  1.75101215  0.56680162   0.16194332            50.87762  7.974482
## 3026  2.04260727  0.93959935   0.40095624            57.05104  5.706173
## 3027  0.88170463  0.00000000   0.44085231            51.44144  5.031447
## 3028  0.56818182  0.00000000   0.00000000            53.43610  2.613240
## 3029  0.00000000  1.15585384   3.24384788            52.77338 10.775862
## 3030  1.02564103  0.74592075   1.72494173            50.48544  6.746988
## 3031  0.60562878  0.54625341   0.20187626            59.69796  6.744329
## 3032  0.42831138  0.81379163   1.76678445            45.56004  7.082002
## 3033  0.78032632  0.63844881   0.10640813            55.11348  7.435159
## 3034  0.00000000  0.54726368   0.99502488            57.78061  4.664723
## 3035  3.16804789  1.61035505   1.89306799            50.73057  7.404551
## 3036  0.41308090  0.00000000   0.41308090            42.70197  7.127430
## 3037  0.51752408  0.29206805   0.79934413            55.21606  6.565531
## 3038  3.69003690  0.24176104   0.08906986            55.93438  4.685714
## 3039  3.99940853  4.40735168   0.60713074            41.84409  4.146877
## 3040  0.90270812  0.30090271   3.44366433            55.96546  4.210526
## 3041  0.78270593  0.40998882   0.44726053            52.14968  3.050109
## 3042  1.14510399  1.38654158   1.01403787            43.27678  3.977583
## 3043  3.83775351  0.32761311   1.70046802            51.06383  7.773512
## 3044  2.32677134  4.04491961  14.13028842            52.00794  8.186470
## 3045  2.31318776  1.31647174   5.68070519            55.15395  7.809192
## 3046  1.17656195  0.24463169   2.13179047            58.48423  7.582938
## 3047 16.59009976  3.17775301   1.35645744            56.04024  8.981723
##      deathRate PctDoubleCoverage PctNoCoverage EmpSponsoredPct
## 112      211.0               0.0           0.0        55.39683
## 113      167.7               0.0           9.8        72.17806
## 114      145.2               6.5           0.0        56.01132
## 115      143.2               0.0           8.5        83.42466
## 116      262.1               0.0           6.4        61.76991
## 117      178.7               0.0           5.0        68.84817
## 118      191.5               0.0          10.0        77.66571
## 119      123.8               0.0           6.5        77.71346
## 120      127.4               0.0           4.4        75.66303
## 121      195.7               0.0           1.4        63.17512
## 122      254.3               1.3           0.0        62.65060
## 123      213.5               1.3           0.0        56.87382
## 124      121.8               0.0           5.4        63.60601
## 125      132.6               2.6           0.0        59.27007
## 126      166.0               0.0           6.5        69.87768
## 127      188.4               0.0           0.5        71.59763
## 128      193.5               0.0           3.1        67.69984
## 149      160.3               0.5           0.0        76.47059
## 368      164.1              17.8           0.0        49.01961
## 369      167.9               5.0           0.0        76.41866
## 370      189.3               5.1           0.0        61.46927
## 371      162.6               0.0           0.9        67.57679
## 372      155.3               3.7           0.0        71.74825
## 568      182.7               0.0           2.1        67.91277
## 1014     153.4               5.8           0.0        68.54220
```

```
## 1026     142.3                 0.0           4.9         62.81646
## 1295     136.2                 7.0           0.0         46.98795
## 1296     134.0                15.8           0.0         48.31169
## 1297     197.8                 0.0          12.1         65.16854
## 1298     150.7                 0.0           1.8         63.60053
## 1299     156.9                10.7           0.0         52.13675
## 1300     155.4                 7.4           0.0         58.35735
## 1301     164.2                 0.0          10.0         60.61121
## 1302     194.7                 4.5           0.0         62.06416
## 1303     162.2                 5.0           0.0         68.17577
## 1304     122.6                 0.0          10.1         66.34615
## 1305     127.6                 7.4           0.0         59.34343
## 1306     178.7                 8.7           0.0         67.69627
## 1307     173.0                 6.7           0.0         69.84536
## 1308     165.8                16.3           0.0         42.64706
## 1309     146.8                 2.9           0.0         75.00000
## 1310     209.6                 0.0           1.1         70.70968
## 1311     129.4                 3.5           0.0         60.55944
## 1312     141.4                 7.6           0.0         59.78112
## 1313     148.6                 7.4           0.0         62.14834
## 1314     166.5                 6.9           0.0         53.24190
## 1315     164.5                 3.8           0.0         57.62712
## 1316     219.4                 7.3           0.0         59.73333
## 1317     129.1                12.6           0.0         56.63717
## 1318     182.9                 0.0           3.2         68.94502
## 1319     161.2                 8.5           0.0         69.39281
## 1320     143.8                 8.3           0.0         65.55407
## 1321     150.8                10.3           0.0         61.90476
## 1322     176.2                 3.3           0.0         65.44021
## 1323     150.2                 5.6           0.0         69.05055
## 1324     151.3                 7.1           0.0         59.49686
## 1325     208.4                 1.0           0.0         66.66667
## 1326     193.4                10.5           0.0         55.86298
## 1327     165.4                 1.0           0.0         69.95769
## 1328     147.7                 8.4           0.0         62.43781
## 1329     183.5                 2.8           0.0         68.14159
## 1330     128.7                12.7           0.0         55.18135
## 1331     109.9                 5.7           0.0         63.04945
## 1332     181.3                 7.1           0.0         62.44784
## 1333     166.2                 9.4           0.0         52.14477
## 1334     151.2                 5.7           0.0         65.29563
## 1335     182.5                 5.6           0.0         57.82967
## 1336     171.1                 9.2           0.0         58.70712
## 1337     153.9                 4.2           0.0         64.80100
## 1338     177.9                 3.9           0.0         65.45961
## 1339     177.8                12.7           0.0         52.57732
## 1340     172.6                 2.2           0.0         66.42755
## 1341     154.1                11.6           0.0         56.22490
## 1342     173.6                 0.6           0.0         67.61769
## 1343     154.3                 1.8           0.0         59.25059
## 1344     164.7                 7.0           0.0         57.06294
## 1345     114.3                 8.7           0.0         60.37234
## 1346     151.9                 9.8           0.0         48.36879
## 1347     175.6                 0.0           0.0         66.71368
```

```
## 1348     160.5              8.8          0.0        60.40428
## 1349     171.5              0.0          2.8        72.68786
## 1350     164.4              0.0         12.5        79.67480
## 1351     171.6              3.6          0.0        67.64296
## 1352     143.1             11.0          0.0        43.05177
## 1353     161.6              2.0          0.0        60.49005
## 1354     157.6             15.1          0.0        41.05263
## 1355     126.0              1.5          0.0        60.12365
## 1356     127.9              0.4          0.0        67.88512
## 1357     148.2              0.0          5.1        64.70588
## 1358     170.1              3.5          0.0        69.46355
## 1359     154.5              5.7          0.0        59.62963
## 1360     177.9             10.1          0.0        56.66267
## 1361     150.3              6.6          0.0        68.23239
## 1362     175.5              2.1          0.0        53.38645
## 1363     172.4              8.3          0.0        60.08065
## 1364     177.6              4.9          0.0        45.74616
## 1365     171.1              0.1          0.0        62.06323
## 1366     293.9              1.6          0.0        56.73534
## 1367     221.8              0.0         13.3        71.59533
## 1486     160.8              0.0          5.9        70.35398
## 1564     160.2              3.6          0.0        68.79150
## 1744     172.7              7.2          0.0        70.29831
## 1840     133.4              0.0          8.7        81.08108
## 1924     164.9              0.0          8.3        75.73099
## 2454     178.0             14.8          0.0        46.38633
## 2455     151.9              6.0          0.0        70.81761
## 2456     161.5             12.1          0.0        63.92638
## 2457     187.8              7.2          0.0        72.64022
## 2458     148.8              4.5          0.0        78.40000
## 2459     168.1             11.2          0.0        51.70178
## 2460     167.2              8.0          0.0        58.68613
## 2461     149.0              7.1          0.0        73.53308
## 2462     161.0              5.3          0.0        73.35025
## 2463     184.9              2.8          0.0        59.89583
## 2464     128.7             12.5          0.0        58.05142
## 2465     153.8             14.1          0.0        51.69972
## 2466     176.7             11.2          0.0        60.48502
## 2467     154.4              4.9          0.0        77.49392
## 2468     153.6              6.5          0.0        73.47188
## 2469     160.9             13.1          0.0        59.43517
## 2470     158.9             11.7          0.0        58.39112
## 2471     152.7              8.0          0.0        62.16578
## 2472     164.1              9.3          0.0        62.01991
## 2473     161.6              8.5          0.0        66.83938
## 2474     159.9             14.7          0.0        52.51701
## 2475     156.8              2.7          0.0        74.40318
## 2476     141.8             10.9          0.0        65.97132
## 2477     156.0             12.8          0.0        54.05007
## 2478     177.3              6.1          0.0        72.93333
## 2479     177.7             10.2          0.0        62.06897
## 2480     130.4             12.6          0.0        59.32836
## 2481     162.2              9.1          0.0        61.76471
## 2482     147.5              6.8          0.0        63.08345
```

```
## 2483     168.3              10.3          0.0        56.23306
## 2484     173.3               9.8          0.0        59.87159
## 2485     145.6              17.0          0.0        48.98219
## 2486     164.5              14.4          0.0        61.61335
## 2487     172.7               9.5          0.0        59.22190
## 2488     166.9               8.3          0.0        71.28335
## 2489     146.8              12.3          0.0        57.25191
## 2490     163.0               6.2          0.0        67.01434
## 2491     175.4               9.4          0.0        67.91721
## 2492     215.7               0.0          3.8        57.82881
## 2493     148.2               8.9          0.0        60.41667
## 2494     162.5              11.3          0.0        59.03448
## 2495     151.2               8.3          0.0        65.78600
## 2496     190.0               8.1          0.0        64.13199
## 2497     169.5               8.9          0.0        62.41234
## 2498     155.6               8.4          0.0        66.75749
## 2499     156.4              12.5          0.0        53.28084
## 2500     133.3               8.7          0.0        71.25155
## 2501     138.1               0.6          0.0        63.15007
## 2502     169.9              10.8          0.0        55.76102
## 2503     142.2               6.8          0.0        75.74627
## 2504     156.9              13.0          0.0        59.03614
## 2505     174.2               9.4          0.0        69.00662
## 2506     161.7               8.8          0.0        61.54971
## 2507     173.0               6.9          0.0        53.54559
## 2508     184.4               7.0          0.0        64.00000
## 2509     154.5              14.4          0.0        56.25000
## 2510     166.5               2.4          0.0        73.54651
## 2511     157.6               8.9          0.0        67.21536
## 2512     180.7               8.1          0.0        55.02793
## 2513     176.5              11.2          0.0        56.56168
## 2514     168.4               4.3          0.0        70.02551
## 2515     147.0               8.0          0.0        60.16260
## 2516     158.2              10.0          0.0        68.53234
## 2517     184.8               9.3          0.0        66.35135
## 2518     153.9               2.3          0.0        79.53216
## 2519     170.5               4.6          0.0        78.37181
## 2520     181.7               8.8          0.0        65.66580
## 2521     153.7               6.5          0.0        70.21823
## 2522     145.9               8.2          0.0        71.74770
## 2523     146.2              12.0          0.0        62.11401
## 2524     162.3              10.6          0.0        58.88889
## 2525     147.2               3.4          0.0        62.17852
## 2526     132.3              17.5          0.0        50.65963
## 2527     160.2              11.9          0.0        62.98201
## 2528     187.9              10.2          0.0        55.36000
## 2529     163.0               8.6          0.0        67.53247
## 2530     152.1               6.9          0.0        75.96266
## 2531     159.7               3.9          0.0        60.08646
## 2532     122.5               9.5          0.0        62.19975
## 2533     166.8               4.9          0.0        65.85678
## 2534     165.2               4.6          0.0        76.38376
## 2535     151.9               9.5          0.0        56.37584
## 3019     196.4               3.7          0.0        64.69697
```

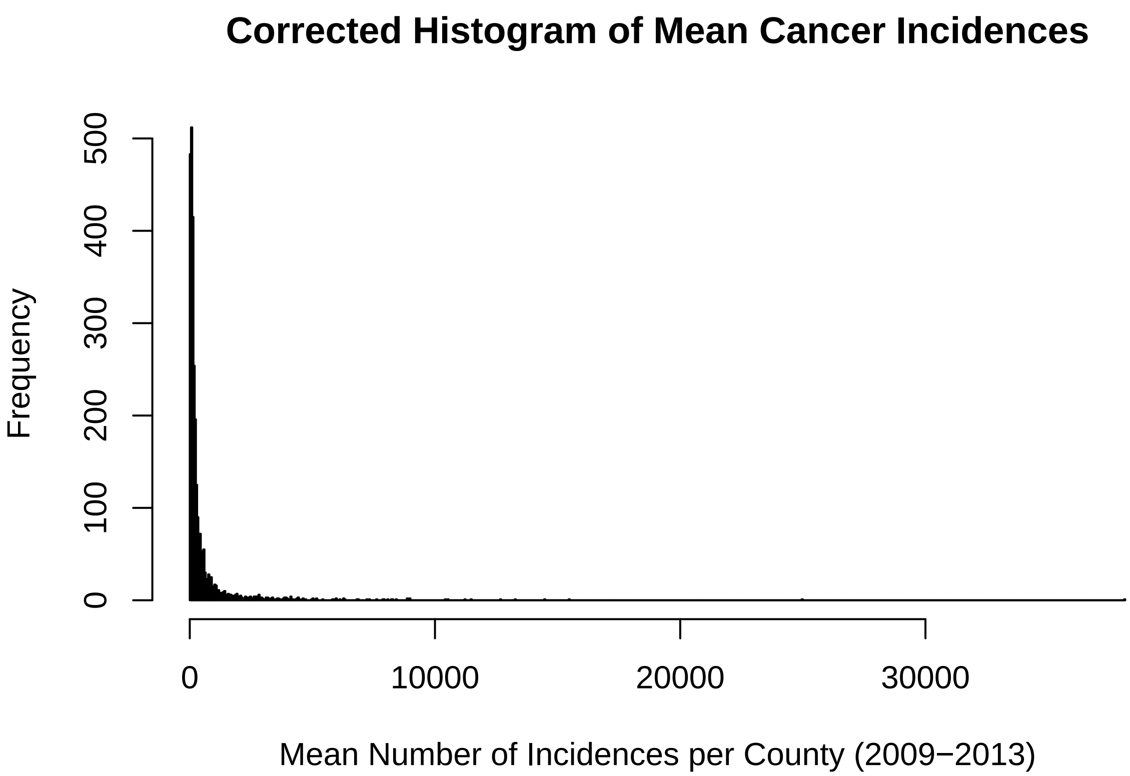
```
## 3020     174.8              5.3          0.0        50.07386
## 3021     180.2              1.3          0.0        66.37807
## 3022     197.8              8.1          0.0        54.60705
## 3023     178.3              0.2          0.0        64.04834
## 3024     166.6              2.8          0.0        66.56535
## 3025     184.2              4.6          0.0        61.46927
## 3026     175.0              3.1          0.0        71.93211
## 3027     177.8              8.2          0.0        60.76818
## 3028     194.2              5.7          0.0        54.72000
## 3029     150.0             13.2          0.0        49.30991
## 3030     153.7              4.8          0.0        69.58831
## 3031     169.2             14.0          0.0        53.99002
## 3032     178.6              6.0          0.0        58.24022
## 3033     176.6              5.1          0.0        68.76712
## 3034     209.6              6.8          0.0        58.84718
## 3035     184.4              3.4          0.0        66.95652
## 3036     214.7              7.8          0.0        52.50737
## 3037     181.2              8.5          0.0        57.16216
## 3038     160.3              0.0          0.7        65.47278
## 3039     153.7              0.0          1.1        69.73518
## 3040     208.3              0.0          1.3        57.85609
## 3041     215.9             11.5          0.0        54.84848
## 3042     146.4              4.3          0.0        66.12500
## 3043     149.6             10.0          0.0        56.96041
## 3044     150.1              0.0          6.7        75.34884
## 3045     153.9              0.0         11.4        77.09677
## 3046     175.0              5.4          0.0        65.34914
## 3047     213.6              1.2          0.0        30.09198
```

We notice that there are a lot of observations that have the exact same value of avgAnnCount - 1962.667684 - and this is the only not integer value in the whole set of avgAnnCount values. For that matter, before any further analysis, we will transform all of these values in NAs.

```
cancer.df$avgAnnCount[cancer.df$avgAnnCount==1962.667684] = NA
```

Now we can go back to analyzing the avgAnnCount:

```
hist(cancer.df$avgAnnCount, breaks="fd", xlab = "Mean Number of Incidences per County (2009-2013)", ylab
```



That extremely right-skewed distribution is an indicative that we could use a log() transformation in this variable. Let's see how the variable is before the transformation.

```r
summary(cancer.df$avgAnnCount)
```

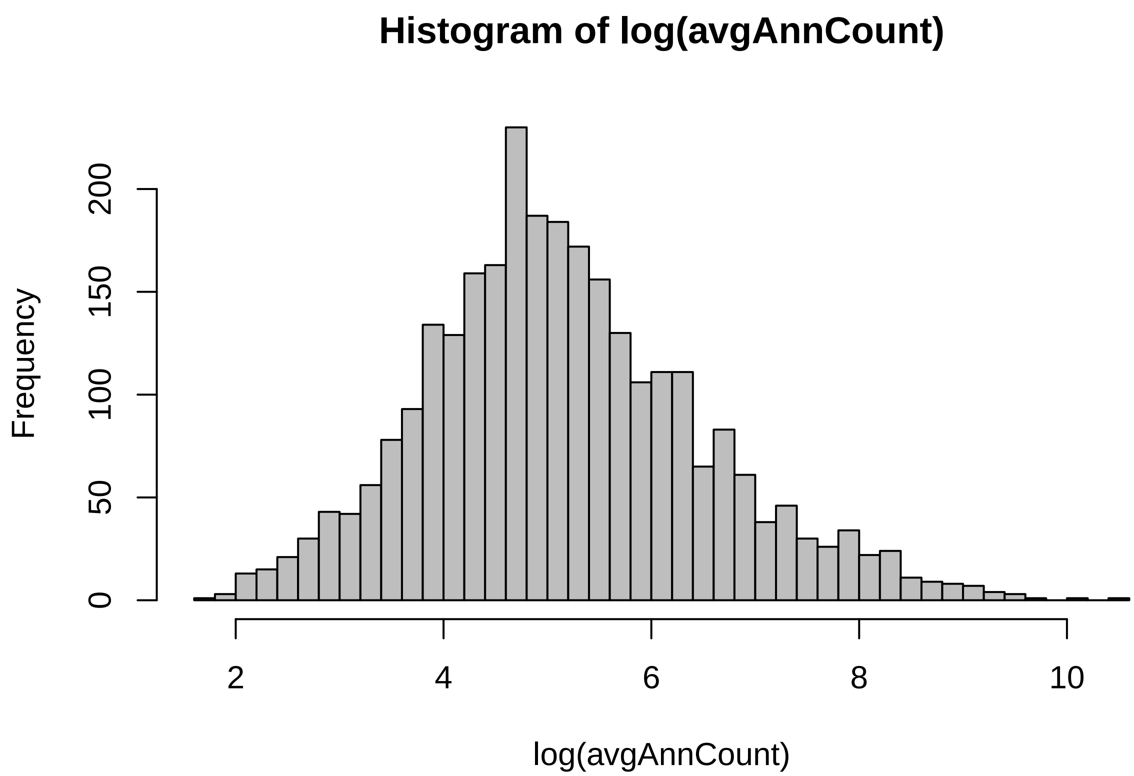
```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's 
##       6      71     153     508     396   38150     206
```

Now to the analysis of the log(avgAnnCount)

```r
summary(log(cancer.df$avgAnnCount))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's 
##   1.792   4.263   5.030   5.158   5.981  10.549     206
```

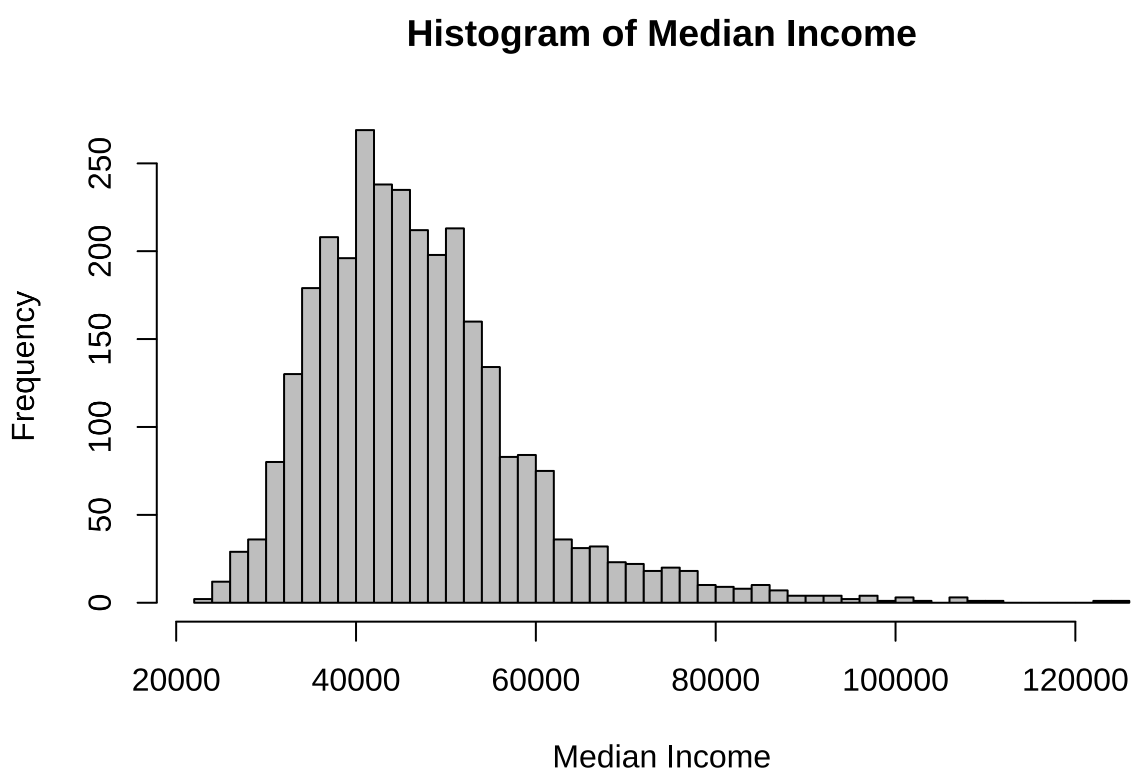
```r
hist(log(cancer.df$avgAnnCount), breaks="fd", xlab = "log(avgAnnCount)", ylab="Frequency", main = "Hist
```



The distribution of log(avgAnnCount) is fairly close to normal.

medIncome

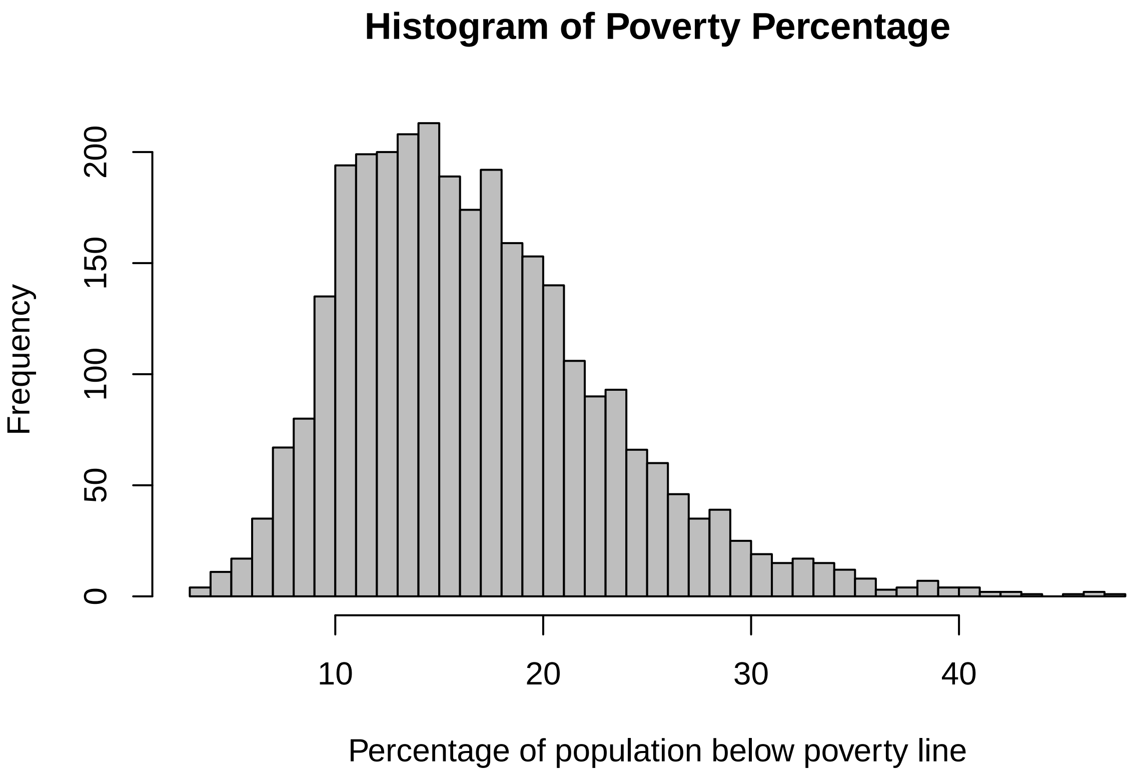
```
hist(cancer.df$medIncome, breaks="fd", xlab = "Median Income", ylab="Frequency", main = "Histogram of Me
```



The distribution of Median Income is fairly normal with a slight right skew.

povertyPercent

```
hist(cancer.df$povertyPercent, breaks="fd", xlab = "Percentage of population below poverty line", ylab=
```



The distribution of Poverty Percent is fairly normal with a slight right skew.

Bivariate Analysis of Secondary Variables

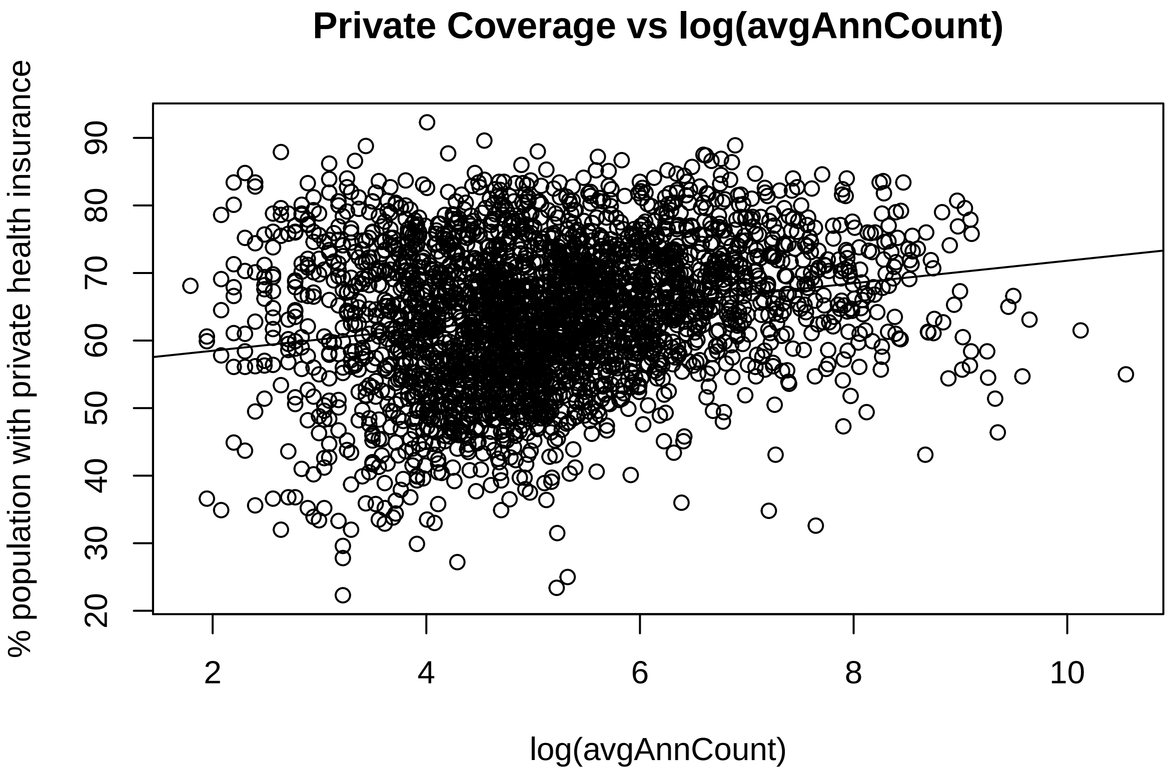
After taking a first look into other variables, and performing necessary corrections, we must now understand how they relate to the primary key variables, in order to comprehend what else might be driving the relationship previously found between different types of health insurance coverage and cancer death rates.

For each secondary variable introduced, we will analyze their relationship with the primary variables and with the output variable itself.

log(avgAnnCount)

Private Insurance Coverage

```
plot(log(cancer.df$avgAnnCount),cancer.df$PctPrivateCoverage, ylab = "% population with private health i
abline(lm(cancer.df$PctPrivateCoverage[!is.na(cancer.df$avgAnnCount)] ~ log(cancer.df$avgAnnCount[!is.na
```



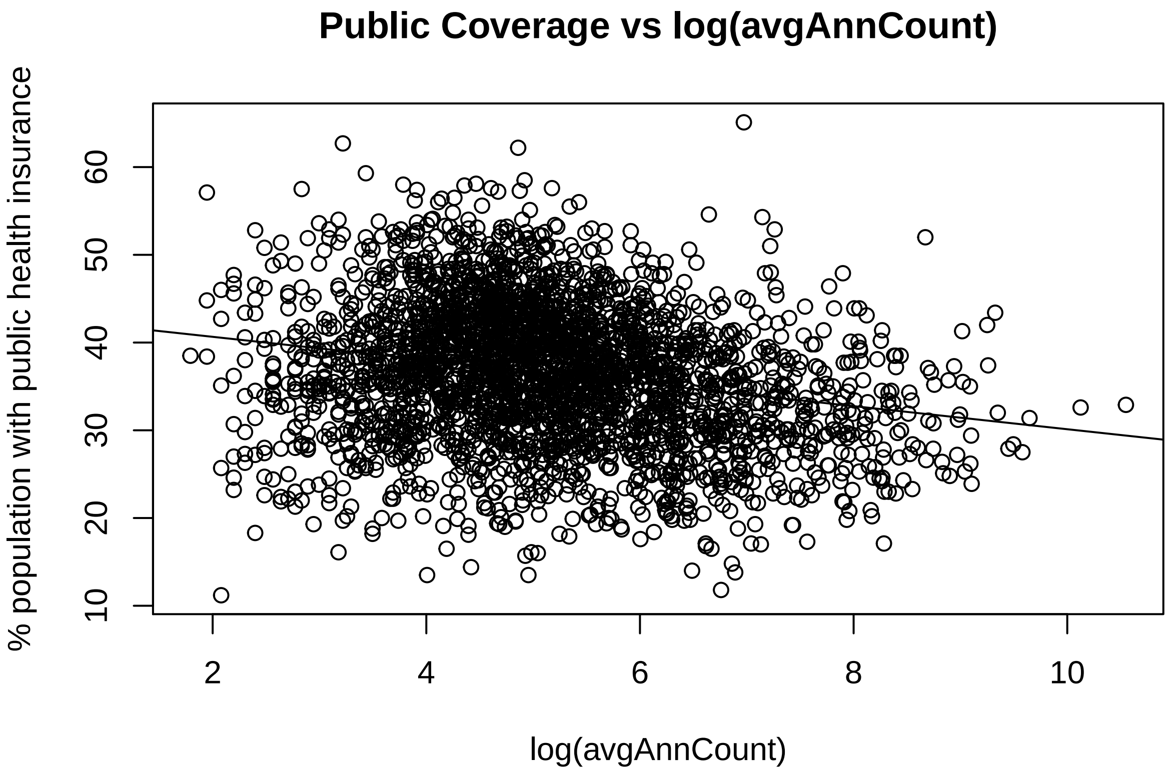

```
cor(log(cancer.df$avgAnnCount),cancer.df$PctPrivateCoverage, use = "complete.obs")
```

```
## [1] 0.2103135
```

There is a small positive correlation between the log(avgAnnCount) and the percentage of population with private health insurance coverage.

Public Insurance Coverage

```
plot(log(cancer.df$avgAnnCount),cancer.df$PctPublicCoverage, ylab = "% population with public health ins
abline(lm(cancer.df$PctPublicCoverage[!is.na(cancer.df$avgAnnCount)] ~ log(cancer.df$avgAnnCount[!is.na
```



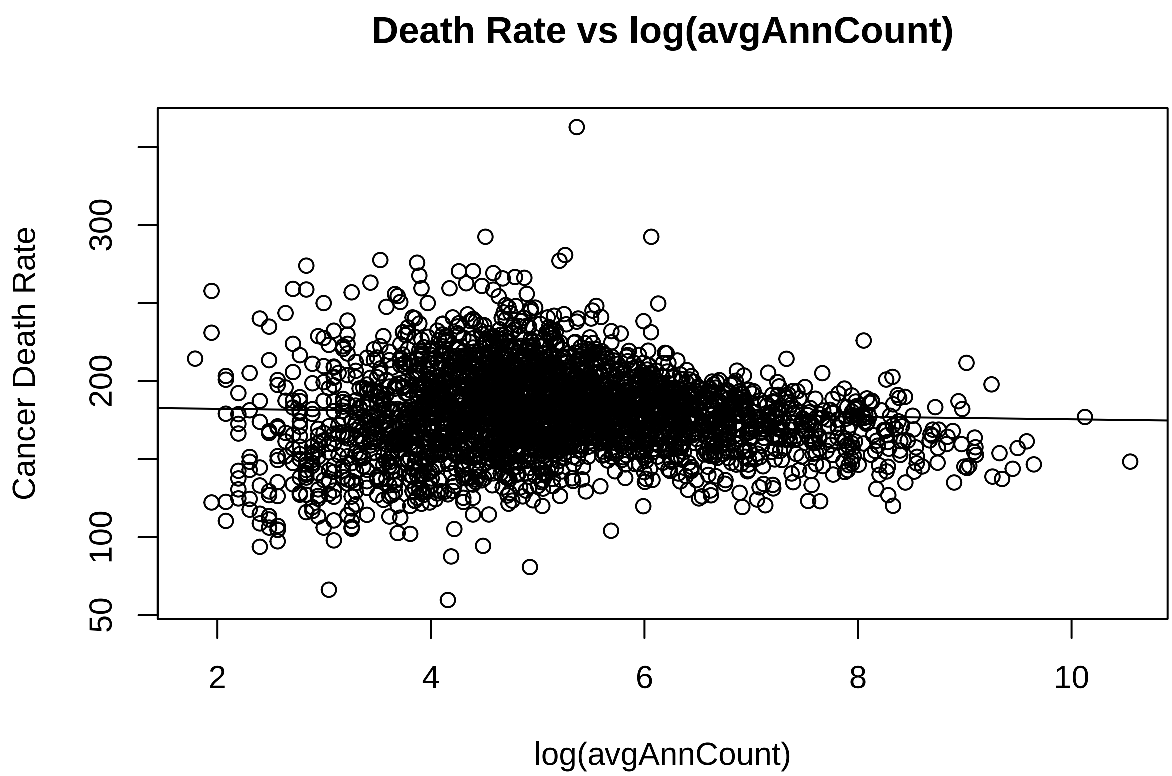

```
cor(log(cancer.df$avgAnnCount),cancer.df$PctPublicCoverage, use = "complete.obs")
```

```
## [1] -0.2241446
```

There is a small negative correlation between the log(avgAnnCount) and the percentage of population with public health insurance coverage, in a very close magnitude to the positive correlation encountrerd with the private health insurance coverage.We have seen before that, in terms of death rate, these two types of health insurance coverage have opposite behaviors. That being said, even if it is a small correlation, the fact that it presents itself in opposite ways and in similar magnitude to public and private health insurance coverage, just like death rates, indicates that we should dig deeper to check if the log(avgAnnCount) has a stronger positive correlation with death rate.

Death Rate

```
plot(log(cancer.df$avgAnnCount),cancer.df$deathRate, ylab = "Cancer Death Rate", xlab="log(avgAnnCount)
abline(lm(cancer.df$deathRate[!is.na(cancer.df$avgAnnCount)] ~ log(cancer.df$avgAnnCount[!is.na(cancer.
```




```r
cor(log(cancer.df$avgAnnCount),cancer.df$deathRate, use = "complete.obs")
```

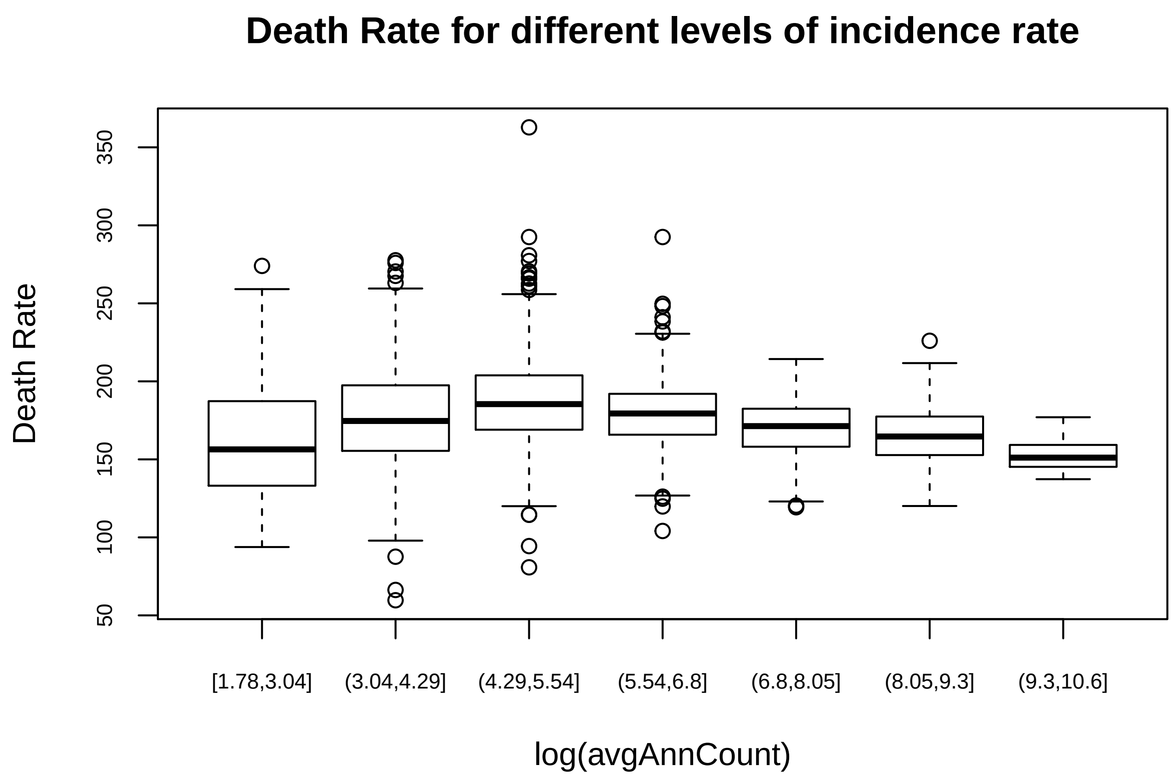
```
## [1] -0.04059046
```

At first sight, by just analyzing these charts and the correlation, it seems as we don't have much of a relation between these two variables. However, since they presented the same opposite behavior with public and private health insurance coverage, we want to take a deeper look into what might be going on.

```r
levels(cut(log(cancer.df$avgAnnCount), 7, include.lowest=TRUE))
```

```
## [1] "[1.78,3.04]" "(3.04,4.29]" "(4.29,5.54]" "(5.54,6.8]"  "(6.8,8.05]"
## [6] "(8.05,9.3]"  "(9.3,10.6]"
```

```r
boxplot(deathRate ~ cut(log(avgAnnCount), 7, include.lowest=TRUE),
        data = cancer.df,
        cex.axis = .7,
        main = "Death Rate for different levels of incidence rate",
        xlab = "log(avgAnnCount)", ylab = "Death Rate")
```

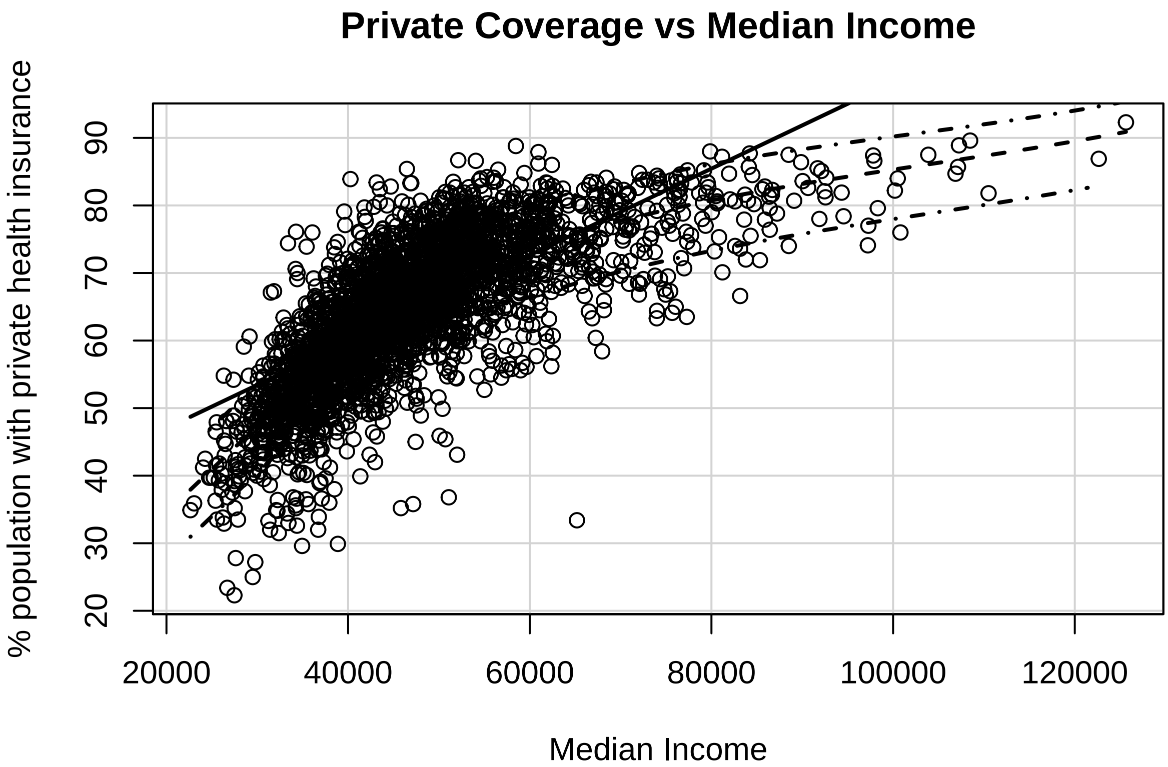


With this visualization it seems as the incidence has a positive correlation with the death rate up to a certain point. But passed that threshold (4.29, 5.54], the correlation becomes negative. One possible interpretation we had is that after a certain number of cancer reported cases, there is a more pressing need to invest in that disease, increasing the survival chances for those with it and, consequently, decreasing the death rates.

medIncome

Private Insurance Coverage

```
scatterplot(cancer.df$medIncome,cancer.df$PctPrivateCoverage, ylab = "% population with private health i
```

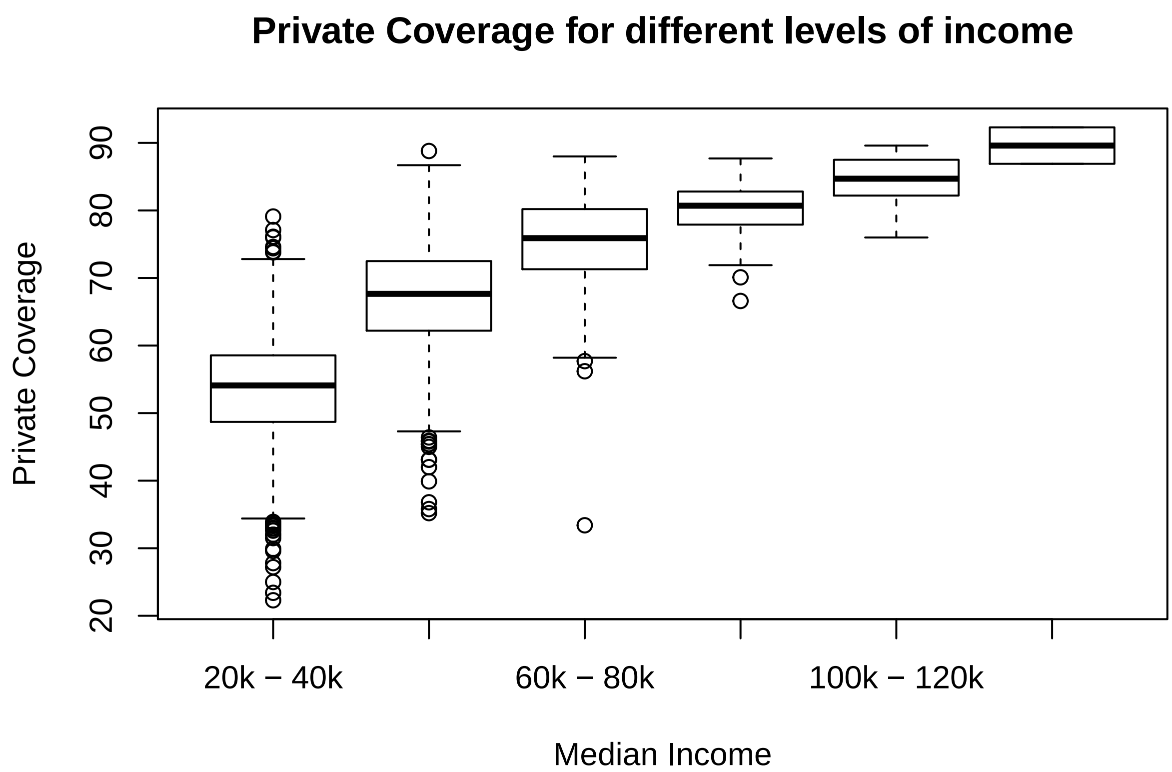



```
cor(cancer.df$medIncome,cancer.df$PctPrivateCoverage)
```

```
## [1] 0.7241748
```

By the chart presented and the strong positive correlation we atest something probably intuitevely known: populations with higher income tend to have more private health insurance coverage. We can take a deeper look by analyzing boxplots for different levels of median income:

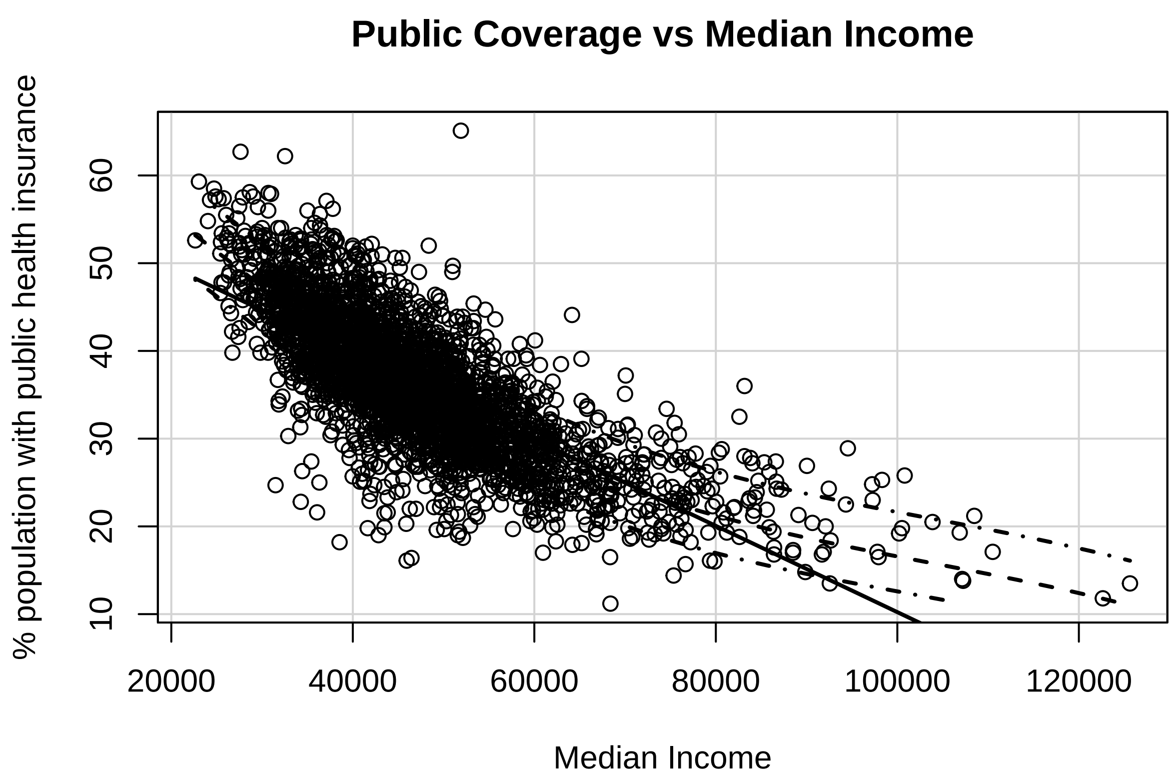
```
boxplot(cancer.df$PctPrivateCoverage ~ cut(cancer.df$medIncome, right=FALSE,seq(20000,140000,20000),labe
        main = "Private Coverage for different levels of income",
        xlab = "Median Income", ylab = "Private Coverage")
```



It confirms what we previously stated. There is a clear correlation between wealth and private health insurance coverage.

Public Insurance Coverage

```
scatterplot(cancer.df$medIncome,cancer.df$PctPublicCoverage, ylab = "% population with public health ins
```

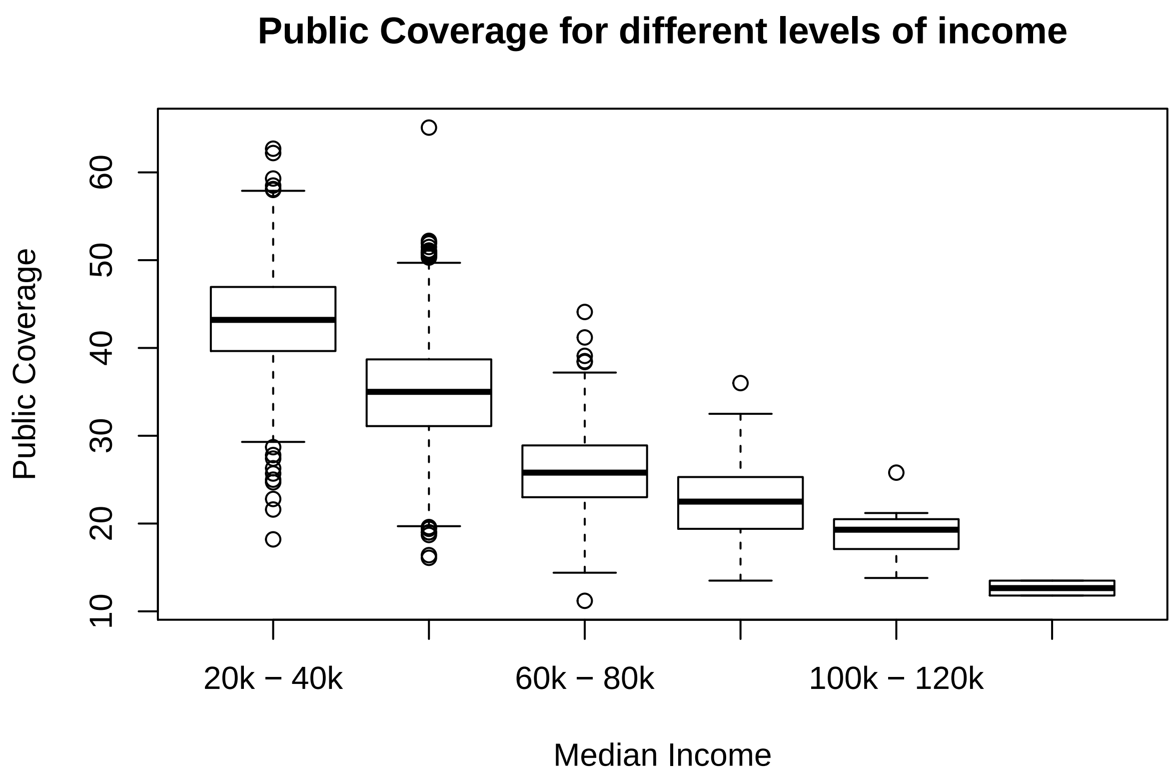


```r
cor(cancer.df$medIncome,cancer.df$PctPublicCoverage)
```

```
## [1] -0.7548218
```

Similarly to what we have seen with the Private Health Insurance Coverage, there is a clear negative correlation between Public Health Insurance Coverage and the median income. That can be interpreted that populations with lower income tend to be more dependent on Public Health Insurance, probably because the Private option is not affordable. We can take a deeper look by analyzing boxplots for different levels of median income:

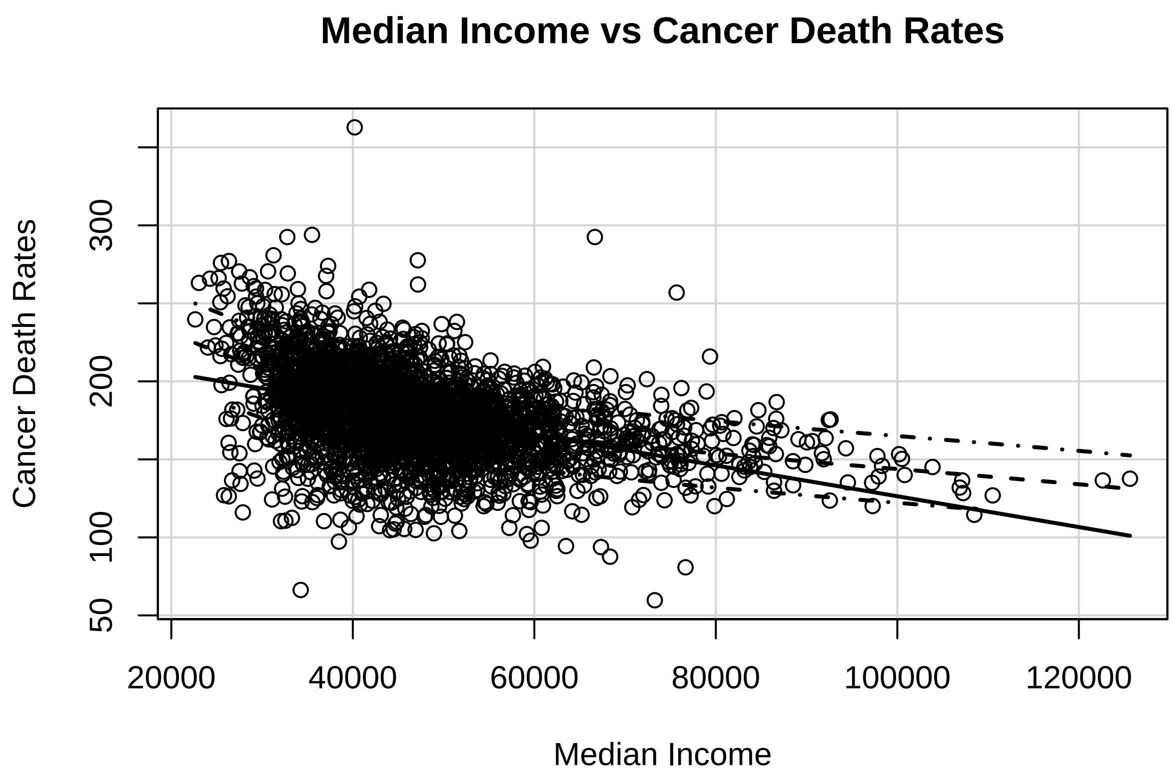
```r
boxplot(cancer.df$PctPublicCoverage ~ cut(cancer.df$medIncome, right=FALSE,seq(20000,140000,20000),label
        main = "Public Coverage for different levels of income",
        xlab = "Median Income", ylab = "Public Coverage")
```



The boxplot only confirms what we have noticed before. For higher levels of income, the publich health insurance coverage is lower. That means this variable presents also presents the opposite behavior as death rates. The higher the median income, higher the private coverage and lower the public coverage. So we should probably check if there is a direct relation between the median income and death rates.

Death Rates

```r
scatterplot(cancer.df$medIncome,cancer.df$deathRate, ylab = "Cancer Death Rates", xlab="Median Income",
```

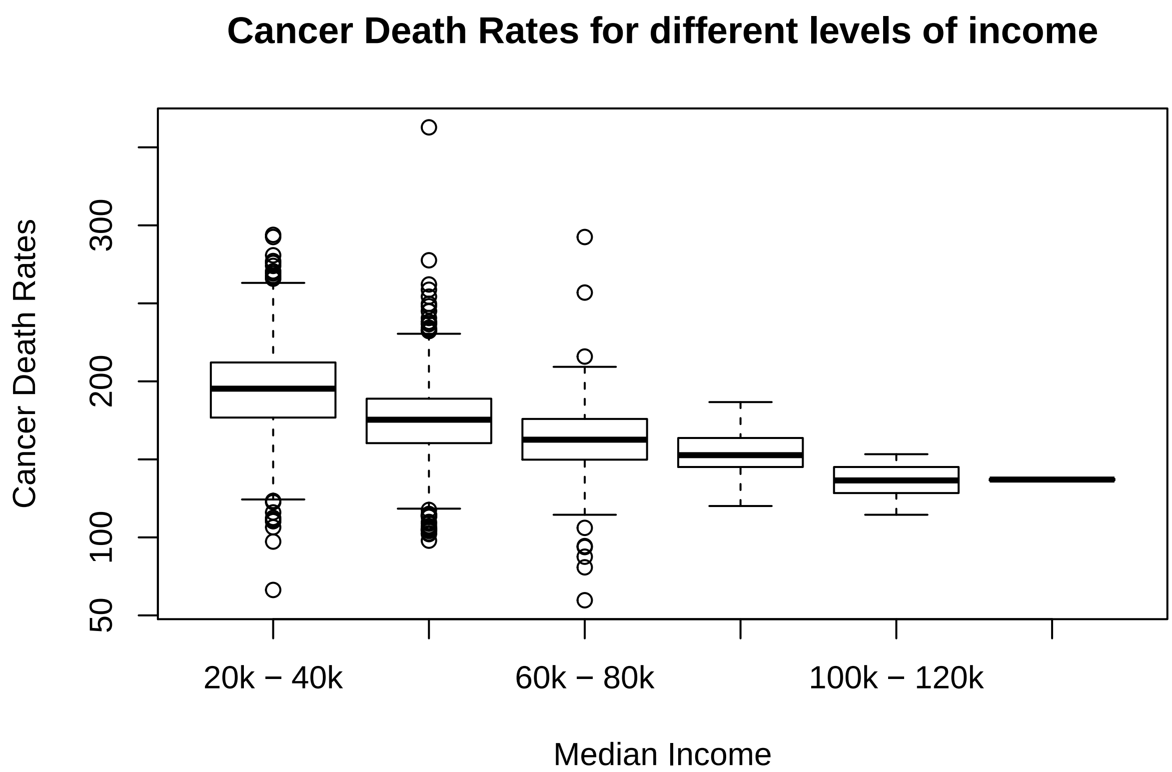



```r
cor(cancer.df$medIncome,cancer.df$deathRate)
```

```
## [1] -0.4286149
```

We see that there is a stronger negative correlation between median income and death rates than private health insurance coverage and death rates, which may lead us to the hypothesis that actually socieconomic factors have more to do with death rates than the percent coverage by type of health insurance itself. Taking a deeper look by analyzing the boxplot by levels of median income may provide us with better insights

```r
boxplot(cancer.df$deathRate ~ cut(cancer.df$medIncome, right=FALSE,seq(20000,140000,20000),labels = c("
        main = "Cancer Death Rates for different levels of income",
        xlab = "Median Income", ylab = "Cancer Death Rates")
```

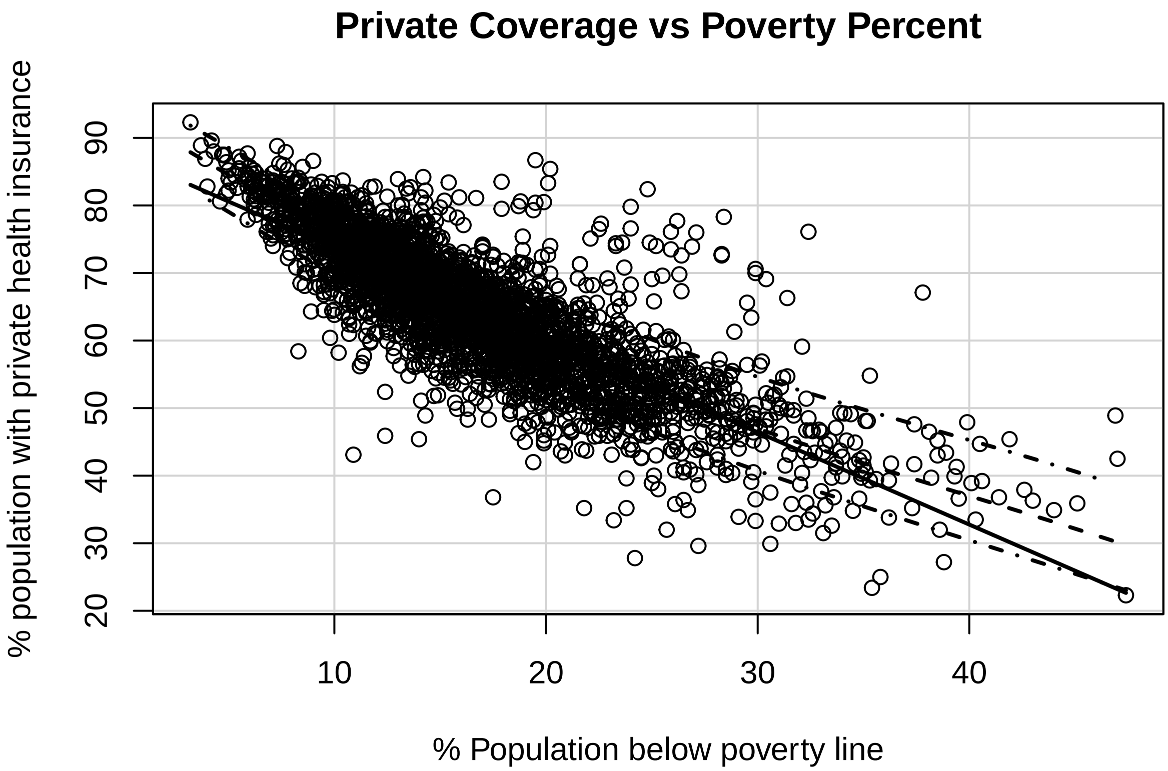


It seems to confirm our hypothesis, however, taking a deeper look into another socieconomic variable might strenghten our hypothesis.

povertyPercent

Private Insurance Coverage

```
scatterplot(cancer.df$povertyPercent,cancer.df$PctPrivateCoverage, ylab = "% population with private hea
```

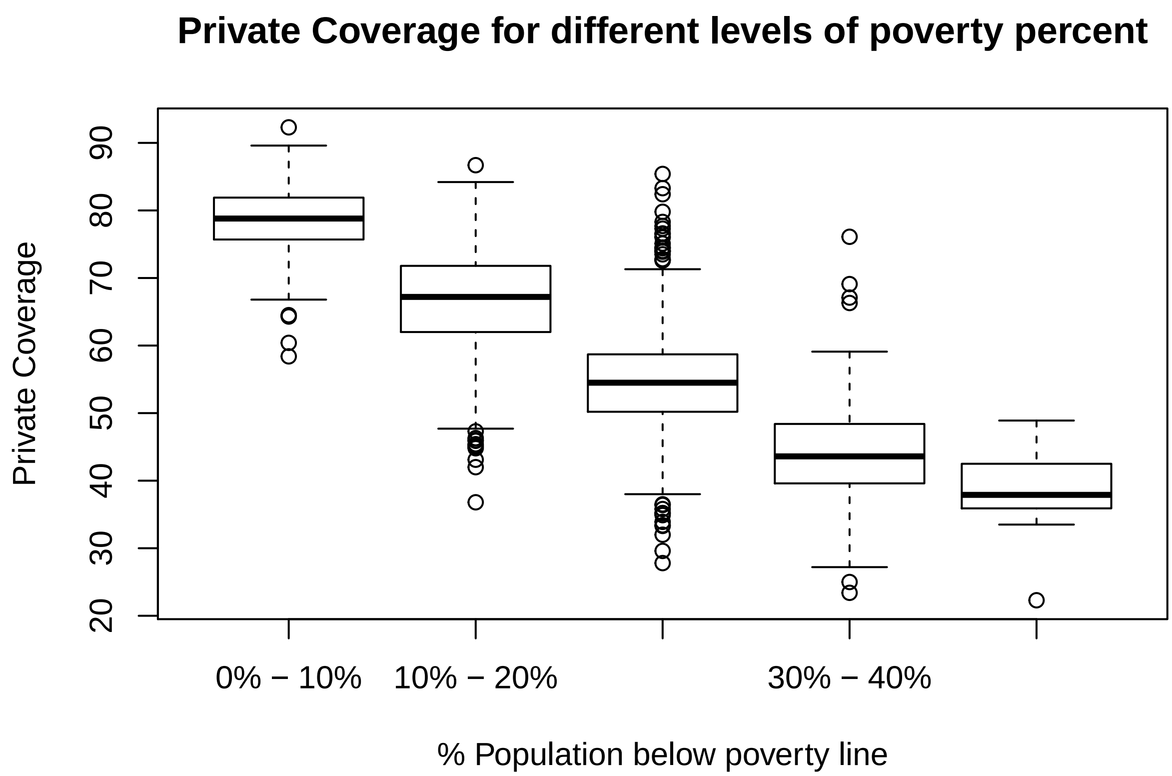



```r
cor(cancer.df$povertyPercent,cancer.df$PctPrivateCoverage)
```

```
## [1] -0.8225343
```

The strongest relation we have encountered so far, we see that populations with higher percentage below poverty line tend to have less private health insurance coverage, the opposite behavior to the median income variable. Taking a look into boxplots provides us with a indicative of validity of such hypothesis:

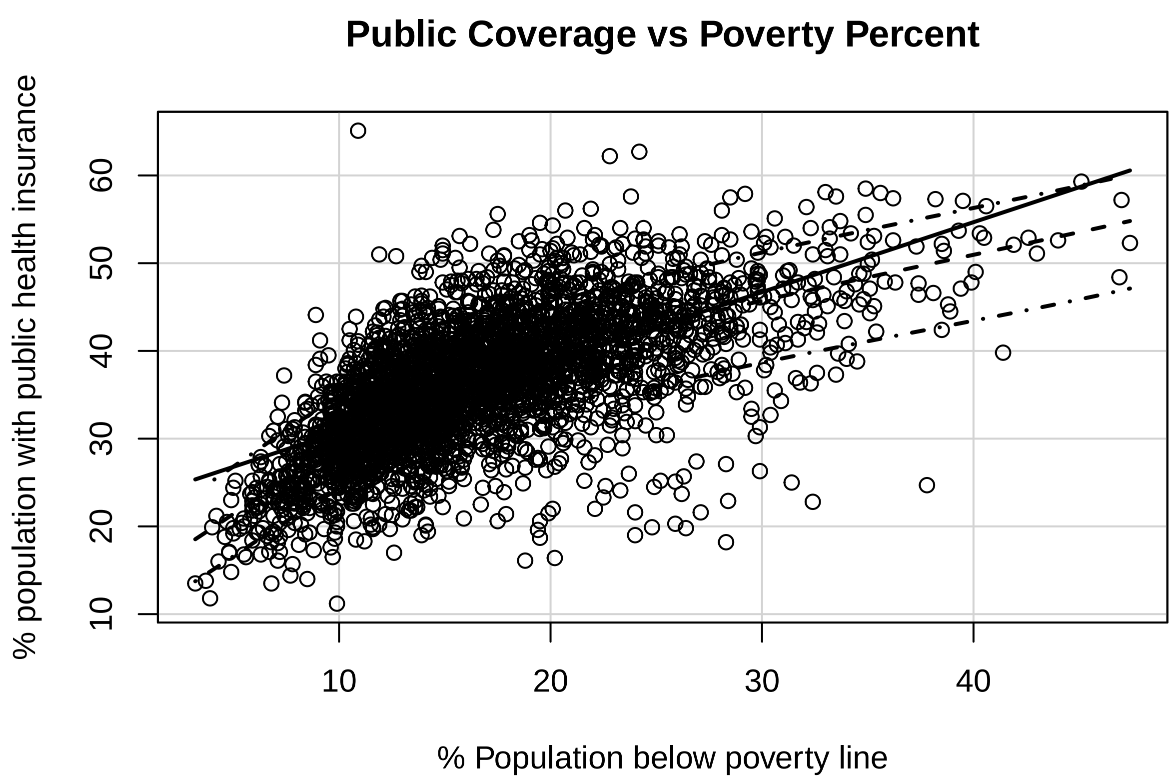
```r
boxplot(cancer.df$PctPrivateCoverage ~ cut(cancer.df$povertyPercent, right=FALSE,seq(0,50,10),labels = c
        main = "Private Coverage for different levels of poverty percent",
        xlab = "% Population below poverty line", ylab = "Private Coverage")
```



As expected, it presents an opposite behavior to median income. In this case, higher the poverty (and lower the income, as we previously saw), the lower private health insurance coverage.

Public Insurance Coverage

```
scatterplot(cancer.df$povertyPercent,cancer.df$PctPublicCoverage, ylab = "% population with public heal
```

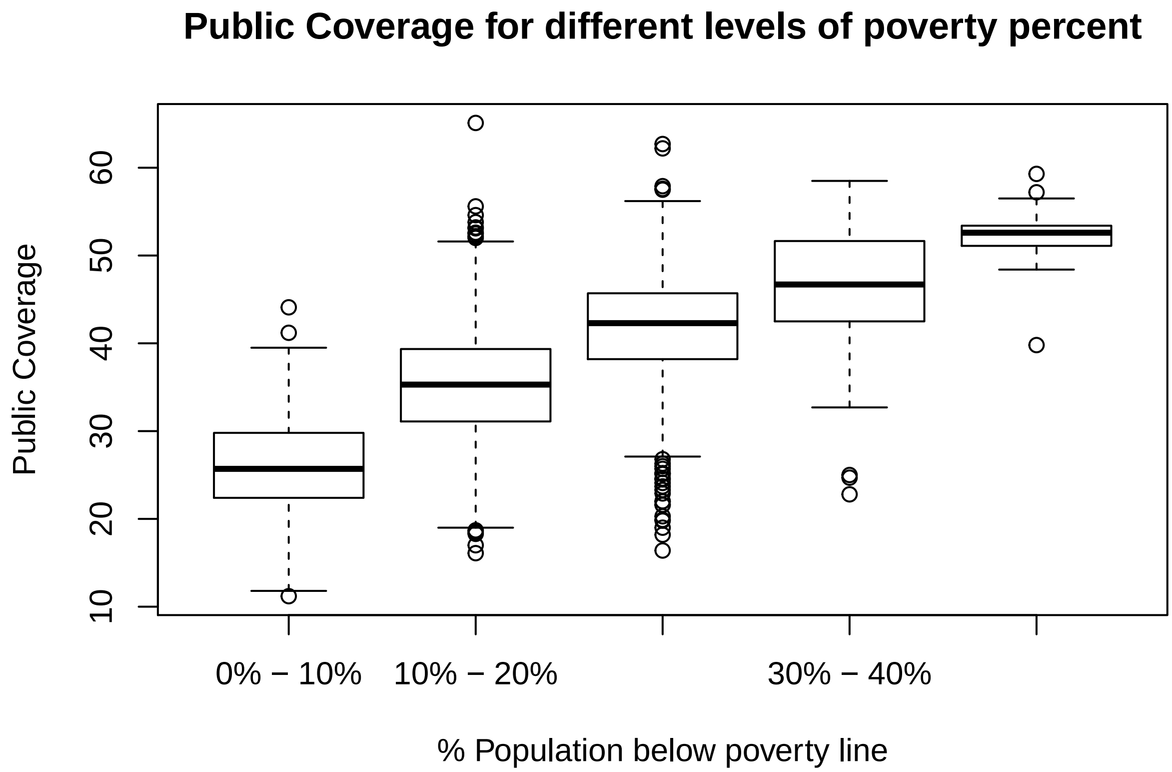


```
cor(cancer.df$povertyPercent,cancer.df$PctPublicCoverage)
```

```
## [1] 0.6511621
```

As expected by our previous analysis, the higher the poverty, more people rely on public health insurance. A deeper look into the levels of poverty vs public health coverage might provide us with better insights:

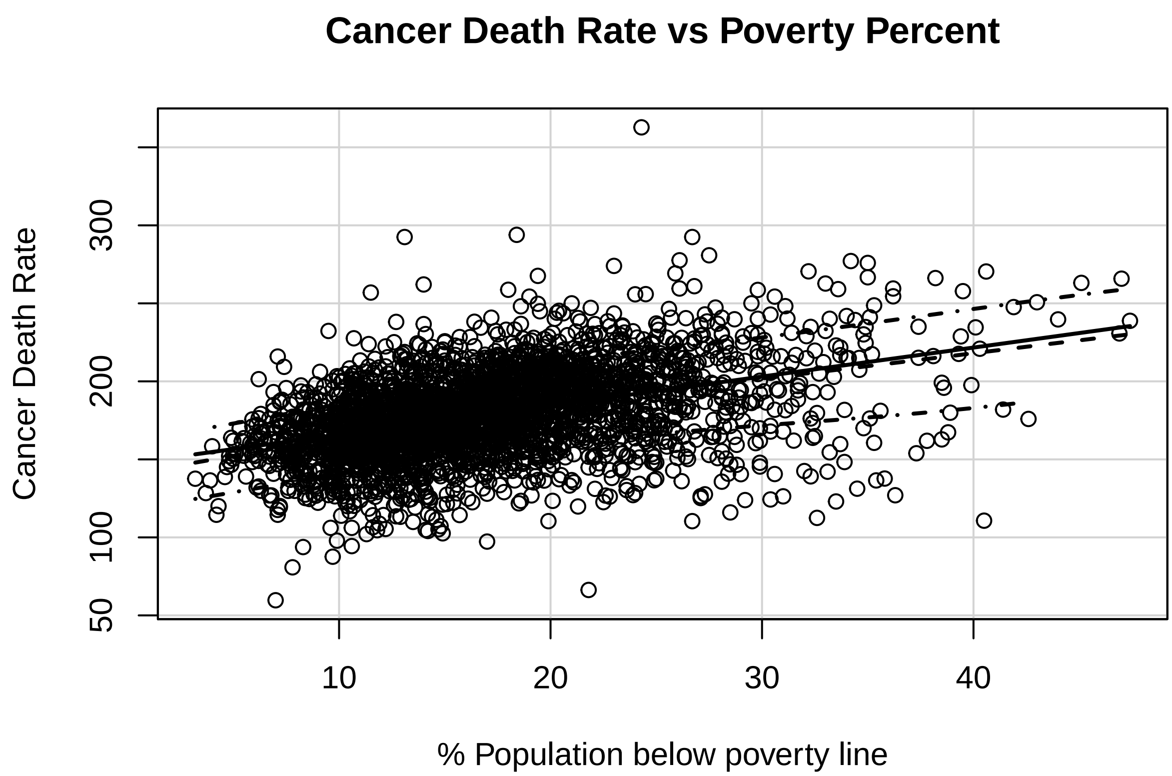
```
boxplot(cancer.df$PctPublicCoverage ~ cut(cancer.df$povertyPercent, right=FALSE,seq(0,50,10),labels = c
        main = "Public Coverage for different levels of poverty percent",
        xlab = "% Population below poverty line", ylab = "Public Coverage")
```



While analyzing the median income, we formulated the hypothesis that maybe the death rate is driven more due to socio-economic factors than to the percentage by type of health insurance coverage. We might confirm that by analyzing also the direct relation between death rate and poverty percent, with the result strenghtening or weakening this hypothesis.

deathRate

```
scatterplot(cancer.df$povertyPercent,cancer.df$deathRate, ylab = "Cancer Death Rate", xlab="% Populatio
```

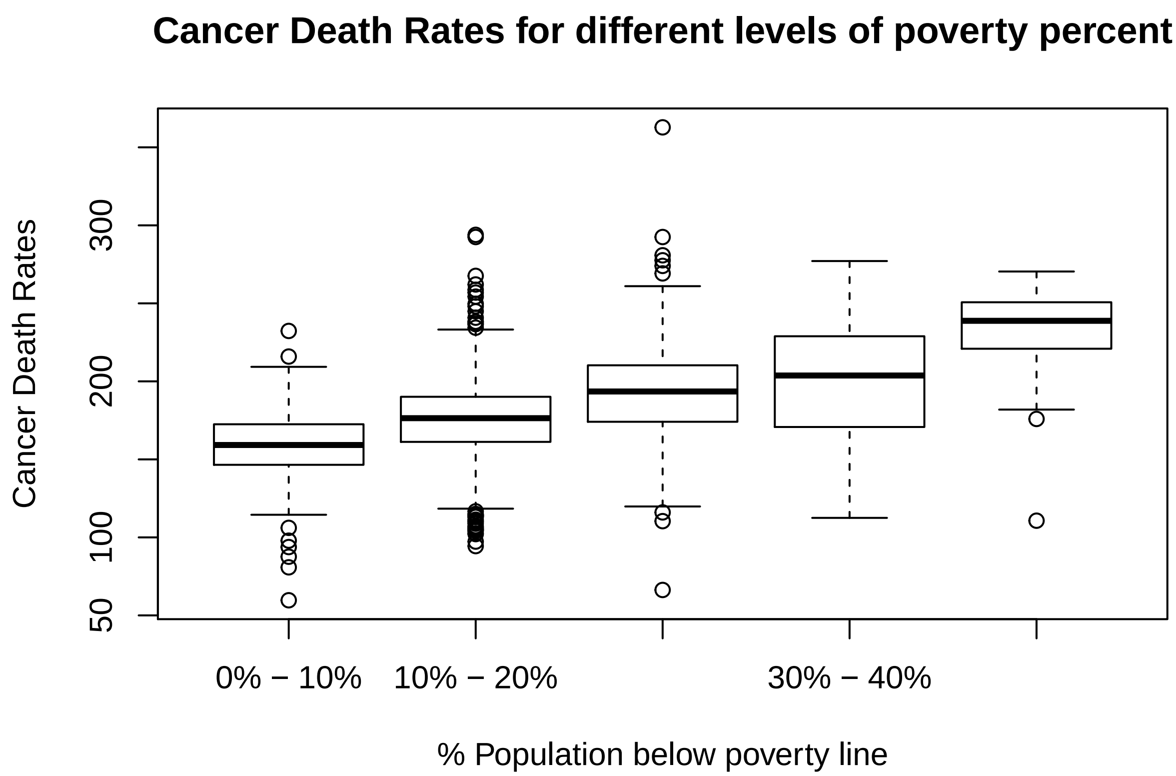



```
cor(cancer.df$povertyPercent,cancer.df$deathRate)
```

```
## [1] 0.429389
```

At first glance, we get a stronger positive relation of death rates and poverty percent than death rates and public health insurance coverage and death rates, indicating that we might be on the right track. To be more sure of it, we can make use of a boxplot by levels of poverty:

```
boxplot(cancer.df$deathRate ~ cut(cancer.df$povertyPercent, right=FALSE,seq(0,50,10),labels = c("0% - 1(
        main = "Cancer Death Rates for different levels of poverty percent",
        xlab = "% Population below poverty line", ylab = "Cancer Death Rates")
```



That all seems to confirm what we have seen analyzing the median income vs the death rates. Higher income / Lower poverty counties tend to have lower death rates.

Conclusion: insurance coverage per ce doesn't improve cancer mortality rates, however, better social economic conditions seems to do so

1. The opposite behavior of public health insurance coverage and private health insurance coverage to the death rates are most likely due to an underlying factor: social economic conditions.
2. Higher income populations tend to have lower cancer death rates, and with more money, more access to private health insurance.
3. Populations with higher percentage of poverty tend to have higher cancer death rates, and poverty conditions limitate the access to private health insurance coverage, being more dependent on the public alternative.
4. Therefore, there is stronger evidence that social economic factors (income, poverty) are stronger factors in explaining the cancer death rates than health insurance per ce, being that the coverage by type of health insurance is also probably affected by these factors, explaining their opposite behaviors with death rates.