Assignment #3

Property Taxes in the Northeast, 2016

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Details

- Who did you collaborate with:
  No one
- Approximately how much time did you spend on this problem set: Two restless days
- What, if anything, gave you the most trouble: The first question gave me alot of trouble.

Load and wrangle data

```
# I pre-wrangled and pre-manipulated this data for you
# so you only have to load it here
# to do that, remove the # from the line below
library(tidyverse)
property_taxes_2016 <- read_csv("C:/Users/nakibeda/Downloads/property
# alternatively, you can use Import Dataset > From Text (readr)
# be sure to name the object taxes
# and type/copy-paste the code that Import Dataset generates in the
```

understand the data

1. Which ten counties collected the most property tax dollars in 2016? ⊕

```
library(tidyverse)
property_taxes_2016 %>% arrange(desc(real_estate_taxes_paid))
```

```
## # A tibble: 217 x 15
##    FIPS  county state population kids_population households
##    <chr> <chr>  <chr>      <int>           <int>      <int>
##  1 36059 Nassa~ New ~    1356801          300415     440230
##  2 36103 Suffo~ New ~    1498130          334451     489758
##  3 36119 Westc~ New ~     969229          222372     341762
##  4 34003 Berge~ New ~     930310          202493     337069
##  5 25017 Middl~ Mass~    1567610          322430     587735
##  6 09001 Fairf~ Conn~     941618          222006     335209
##  7 34025 Monmo~ New ~     627532          139855     232868
##  8 34023 Middl~ New ~     831852          184071     283279
##  9 34027 Morri~ New ~     498215          111109     179734
## 10 36081 Queen~ New ~    2310011          472878     779304
## # ... with 207 more rows, and 9 more variables:
## #   households_with_kids <int>, households_no_kids <int>,
## #   median_income <int>, housing_units <int>, median_home_value <
## #   real_estate_taxes_paid <dbl>, median_real_estate_taxes <int>,
## #   tax_per_housing_unit <dbl>, prop_houses_with_kids <dbl>
```

2. Which ten counties have the lowest ratio of property tax per housing unit (tax_per_housing_unit)? ⊕

```
# type your code to question 2 here
property_taxes_2016 %>% arrange(tax_per_housing_unit) %>% select(sta
```

```
## # A tibble: 217 x 3
##    state        county                          tax_per_housing_u
```

```
##    <chr>        <chr>                                          <dl
##  1 Pennsylvania Forest County, Pennsylvania                     2(
##  2 New York     Hamilton County, New York                       3(
##  3 Pennsylvania Cameron County, Pennsylvania                    5(
##  4 New York     Bronx County, New York                          5:
##  5 Maine        Piscataquis County, Maine                       5'
##  6 Pennsylvania Sullivan County, Pennsylvania                   5!
##  7 Pennsylvania Potter County, Pennsylvania                     6(
##  8 Maine        Washington County, Maine                        7!
##  9 Maine        Franklin County, Maine                          7'
## 10 Pennsylvania Huntingdon County, Pennsylvania                7!
## # ... with 207 more rows
```

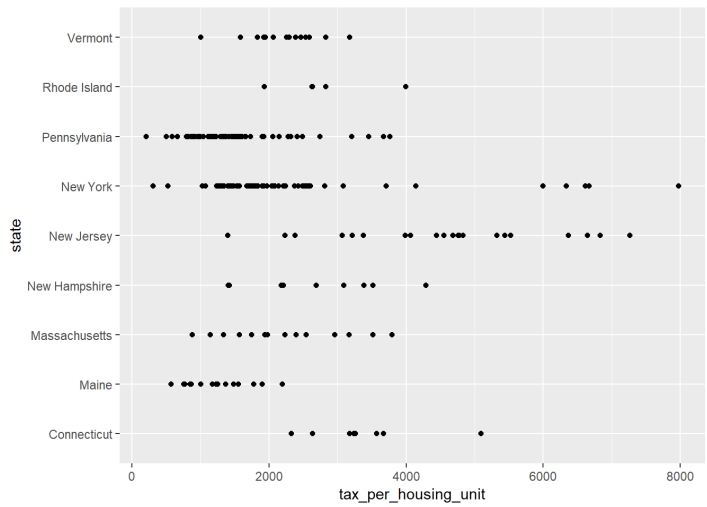
3. Which five counties have the highest proportion of households with kids (prop_houses_with_kids)?

```
# type your code to question 3 here
property_taxes_2016 %>% arrange(desc(county)) %>% select(state, coun
```

```
## # A tibble: 217 x 3
##    state         county                              prop_houses_wi
##    <chr>         <chr>
##  1 Pennsylvania  York County, Pennsylvania
##  2 Maine         York County, Maine
##  3 New York      Yates County, New York
##  4 Pennsylvania  Wyoming County, Pennsylvania
##  5 New York      Wyoming County, New York
##  6 Massachusetts Worcester County, Massachusetts
##  7 Vermont       Windsor County, Vermont
##  8 Vermont       Windham County, Vermont
##  9 Connecticut   Windham County, Connecticut
## 10 Pennsylvania  Westmoreland County, Pennsylvania
## # ... with 207 more rows
```

4. Using ggplot, create a histogram of property taxes per housing unit and facet by state. What does this tell us about property tax rates in these states?

```
# type your code to question 4 here
ggplot(data = property_taxes_2016, aes(x= tax_per_housing_unit, y = 
```



Looking at correlations

5. Find the correlation between property taxes per housing unit (`tax_per_housing_unit`) and the median home value (`median_home_value`). Interpret this correlation in a sentence.

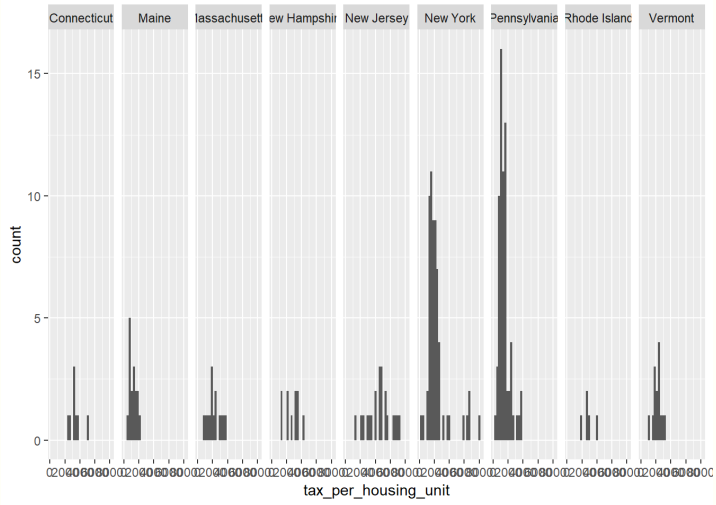
```
# type your code to question 5 here
cor(property_taxes_2016$tax_per_housing_unit, property_taxes_2016$me
```

```
## [1] 0.499541
```

6. Using ggplot, create a scatterplot of property taxes per housing unit and median home value, and facet by state. Does this correspond to the correlation you calculated earlier? Are there state-level trends that stand out to you?

```
# type your code to question 6 here
ggplot(property_taxes_2016) + aes(x = tax_per_housing_unit) + geom_h
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`
```



7. Find the correlation between property tax per housing unit (`tax_per_housing_unit`) and the proportion of households in the county with kids under 18 (`prop_houses_with_kids`). Interpret this correlation in a sentence.

```
# type your code to question 7 here
cor(property_taxes_2016$tax_per_housing_unit, property_taxes_2016$pr
```

```
## [1] 0.6235159
```

Which state has the highest average property tax?

States are categories, not numbers. This means we can't calculate the correlation. Instead, let's calculate the avearge tax per housing unit in each state.

8. Calculate the average (mean) tax per housing unit by state. ⊕

```
# type your code to question 8 here
property_taxes_2016 %>% group_by(state) %>% summarise(avg_tax_per_hou
```

```
## # A tibble: 9 x 2
##   state         avg_tax_per_housing_unit
##   <chr>                            <dbl>
## 1 New Jersey                       4531.
## 2 Connecticut                      3370.
## 3 Rhode Island                     2801.
## 4 New Hampshire                    2727.
## 5 New York                         2300.
## 6 Massachusetts                    2229.
## 7 Vermont                          2206.
## 8 Pennsylvania                     1461.
## 9 Maine                            1226.
```

Which state has the highest average property tax? Does this accord with your expectations?

Since we're in Jersey…

9. Which NJ county collected the most property tax dollars in 2016? Worcestor county collected the most property taxes in 2016

```
# type your code to question 1 here
property_taxes_2016 %>% arrange(desc(county)) %>% select(county, rea
```

```
## # A tibble: 217 x 2
##    county                              real_estate_taxes_paid
##    <chr>                                                <dbl>
##  1 York County, Pennsylvania                        411316600
##  2 York County, Maine                               190295200
##  3 Yates County, New York                            23433900
##  4 Wyoming County, Pennsylvania                      20215100
##  5 Wyoming County, New York                          34825100
##  6 Worcester County, Massachusetts                  789283800
##  7 Windsor County, Vermont                           81727400
##  8 Windham County, Vermont                           58363400
##  9 Windham County, Connecticut                      114294500
## 10 Westmoreland County, Pennsylvania                278321100
## # ... with 207 more rows
```

10. Which NJ county has the lowest level of property taxes per unit? unit 8 with 868.0600

```
# type your code to question 1 here
property_taxes_2016%>% arrange(county)%>% select(tax_per_housing_uni
```

```
## # A tibble: 217 x 1
##    tax_per_housing_unit
##                   <dbl>
```

```
##  1                2053.
##  2                2831.
##  3                2429.
##  4                1346.
##  5                1920.
##  6                1481.
##  7                1367.
##  8                 868.
##  9                3067.
## 10                1567.
## # ... with 207 more rows
```