Final Project Part 3, version 2

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Questions for Part 3 of Final Project

Introduction

Does raising minimum wage cause inflation? Wage push inflation theory is the idea that inflation occurs as wages are increased. In simple terms, increases in wages and then prices create a circular effect on wages where higher wages are needed to compensate due to an increase in prices and services (Kenton (2022)). Investigating this relationship is the purpose of my term project.

In recent years, from my observations, there has been a greater gap between between those who have financial means and those who do not. As a person who has lived in an urban environment for many years, my hometown has seen dramatic housing cost increases while at the same time, campers are lining city streets as well as tents on city sidewalks. The extreme nature of these changes have been surprising to me.

Last term, I began to research the topic of raising minimum wage and was very discouraged to learn that since 2009 the federal minimum wage is held at $7.25 an hour. This topic is important because without a living wage that is standardized for living above the poverty level, the divide between those that have economic means and those who do not will continue to grow with the middle class continuing to shrink. The hallmark of our society has been the ability to have social mobility which is part of our American concept of a middle class (Fivecoat-Campbell (2015)). Without sustainable wages, it will not be possible for folks on the financial lower end to enable change for their circumstances. The federal minimum wage is closely tied to the ability to enact such change - a stagnant wage means family income stagnation (Mishel (2015)). Further, this stagnation points to a greater shift where policy decisions have been made to benefit corporate owners and managers instead of low and middle class workers (Mishel (2015)). This is a data science problem because there are many data sources but there is not one that answers this question, thus I will use a variety of sources to show the necessity of increasing minimum wage.

The problem statement addressed in this project

In order to investigate if raising wages would increase inflation, I am investigating the following questions:

1. What is the relationship between hourly compensation growth and productivity growth and median income
2. Are there differences in median income to housing prices from past years to this year?
3. What is the relationship between the two variables?
4. What is the relationship between the top 0.1%, the 1% upper and the bottom earning groups and inflation rates?

5. Do inflation rates increase as the gap between the top, the lower upper and the bottom increases over time?
6. Has the ratio between median income and median housing changed over time?
7. Does that change move in the same direction as changes in wages for top, middle and low earners?
8. Is there a relationship between home value change, income change and inflation rates?
9. Do home value change and income change predict inflation rates?

How I addressed this problem statement

I addressed this problem statement by finding data sources on the internet about minimum wage and different variables I considered could be related such as median income, median housing prices and different measures of economic growth over time. The input data sources are described in detail below.

1. ASPUS.xls. This is Federal Reserve Economic Data, July 26, 2022. website: https://fred.stlouisfed.org, from FRED Graph Observations, showing Average Sales Price of Houses Sold for the United States, Dollars, Quarterly, Not Seasonally Adjusted by year.
    1. There are two variables in this data, Year/Quarter (1963-2022) (numeric, continuous) and Average Sales Price of Houses Sold (numeric, continuous)
2. economicpolicy_prod_work.xlsx. Economic Policy Institute from February 20, 2020. website: https://www.epi.org/publication/swa-wages-2019/. EPI analysis of unpublished Total Economy Productivity data from the Bureau of Labor Statistics (BLS) Labor Productivity and Costs program.
    1. There are three variables in this data: Year (numeric, continuous), hourly compensation (as a percentage), and net productivity (as a percentage).
3. inflation_overtime.xlsx. The balance website, from July 27, 2022. website: https://www.thebalance.com/u-s-inflation-rate-history-by-year-and-forecast-3306093. U.S. Inflation Rate History and Forecast.
    1. There are four variables in this data: Year (numeric, continuous), Inflation Rate YOY (percentage), Fed Funds Rate (percentage), Event Affecting Inflation (character)
4. medianincome_tableD1.xlsx. U.S. Census Bureau, Current Population Survey, 1968 through 2021 Annual Social and Economic Supplements (CPS ASEC), SEPTEMBER 2021. website: https://www.census.gov/data/tables/2021/demo/income-poverty/p60-273.html. (Table 1-D from site). Historical Median Income Using Alternative Price Indices: 1967 to 2020
    1. Variables in this source are: Year (numeric, continuous), Current Dollars for variables Estimate, Margin of error and CPI-U-RS/current method for variables Estimate, Margin of error. I am not planning on using the similar estimate variables.
5. homechg_incomechg.xlsx. Real Estate Witch House Price to Income Ratio Study, 2021. website: *https://www.realestatewitch.com/house-price-to-income-ratio-2021/.* Home Value Change vs. Income Change (1965-2021)
    1. There are three variables in this data source: Year (numeric, continuous), Home Value Change (percentage), Income Change (percentage).

6. topmidbot.xlsx. Economic Policy Institute, February 20, 2020. website: https://www.epi.org/publication/swa-wages-2019/. Top 0.1% earnings grew 15 times as fast as 90% earnings: Cumulative percent change in real annual earnings, by earnings group, 1979–2018.

    1. There are four variables in the data source, Year (numeric, cumulative), Bottom 90% (percentage), Top 1% (percentage), Top 0.1% (percentage).

7. latebreaker_minwage.xlsx. USA Facts, September 18, 2019. website: https://usafacts.org/articles/minimum-wage-america-how-many-people-are-earning-725-hour/?utm_source=bing&utm_medium=cpc&utm_campaign=ND-Economy&msclkid=e828e5a0aeda14c17aa9874fedeec55f. Minimum wage in America: How many people are earning $7.25 an hour?

8. Actual_MW.xlsx. Wage and Hour Division, accessed August 14, 2022. https://www.dol.gov/agencies/whd/minimum-wage/history/chart. History of Federal Minimum Wage Rates Under the Fair Labor Standards Act, 1938 - 2009

These input data sources became an analysis dataframe that was used to explore the various questions I have.

The data was read into R Studio with a minimal amount of data cleaning done in Excel. Because many sources were from government agencies, header titles and footnotes regarding the data were included. These were stripped off in order to import more easily in R. At times, a field could not be read by R due to some unreadable character in a field. In these few instances, I fixed the source excel workbook field and saved the workbook under a new name.

Six new variables were created. Values in Minimum wage variable were used to created a numeric and character dichotomous variable where each year's minimum wage was assessed to determine if it was higher or lower than the 2022 value of minimum wage. Likewise, each year's inflation rate was compared to a standard value to determine if it was higher or lower than the standard value in order to generate two dichotomous variables (character and numeric). Lastly, two variables were created as a ratio of the median housing price and the median income as well as the a ratio of the median housing price and the actual minimum wage annualized at each year.

Initially, I used exploratory data analysis and created histograms for each variable as well as correlation matrix from R package "Ggally" to get an idea of normal distribution as well as different scatter or line plots produced from the correlation matrix output. These outputs are listed under the Exploratory data analysis section of this document.

After this step, I investigated the data using descriptive statistics to better understand the characteristics for these data and identify any extreme values.

The next step I took was to look at each variable as a function of minimum wage over time or inflation rate. These analyses were a series of scatter plots by one of these two variables.

Likewise, I generated a line plot to investigate the relationship between the ratios of median housing prices and median income as well as minimum wage.

The final analysis I conducted was a Spearman's correlation analysis across continuous variables. Spearman's correlation coefficient was used as most variables do not have a normal distribution.

The above mentioned key analyses are displayed under the section named Key analyses and plots.

Analysis that I planned but was unable to perform was the model under the planned analysis, item 5, part 1. However, it would be possible to do this analysis in two ways.

It would be possible to construct a linear regression model using inflation rate as the outcome and home value change and income change as the independent variables. Likewise, another model could be explored using a logistic regression with the outcome variable as the Y/N inflation rate along with the two independent variables of home value change and income change.

Analysis

All values from the descriptive statistics for the dataframe showed values that were within range and as expected. Since many of these data were percentages or values of income over time or housing changes over time, extreme values would represent a trend versus an entry error.

For Question 1, The relationship between hourly compensation growth and net productivity growth was r=0.814 ($p<0.01$). Likewise, the relationship between hourly compensation growth and median income was r=0.806 ($p<0.01$) while the correlation coefficient for net productivity growth and median income was r=0.997 ($p<0.01$). Each correlation coefficient provided here shows a strong positive relationship between the hourly compensation growth, net productivity growth and median income.

For Question 2, When comparing the two scatter plots for Median Housing Prices and Median Home Sales there is a clear understanding that these data behave very similarly, though their ranges of values are different, they both have a positive upward trend and moving in even, positive increments over the years.

The correlation coefficient between median income and median housing prices is very strong (r=0.997, $p<0.01$) confirming this positive relationship.

For Question 3, Inflation change correlated with the bottom 90% of earners was negative, (r=-0.604, $p<0.01$), with the top 1% was negative (r=-0.614, $p<0.01$) and with the top 0.1% was negative (r=-0.570, $p<0.01$). This negative relationship is more evident as the scatter plots are explored with inflation change have a more flat negative shape while all three earner plots show an upward trend (though the slope of trend and percentage of change between the three groups are vastly different).

For Question 4, The ratio between median housing sales and median income has changed over time. The ratio was 4 until the mid 1980s, 5 until about 2003 and is now around 6, meaning that 6 times the median income equates the median housing value. However, this change for this 40 year period is not very different (ranging from 4 to 6) thus this ratio is essentially a flat line while the top 0.1%, the top 1% and the bottom 90% all show an increasing trend over this same time period. This is likely not the best way to compare these data as the magnitude of increase in the ratio is not shown as it is currently plotted.

Interestingly, an additional analysis was added to look at the ratio of median housing prices to median incomes as well as the ratio of median housing prices to minimum wage. The plot of this relationship show the steep positive increase of the ratio of median housing prices to minimum wage compared to the near flatness of ratio of median housing prices to median income.

For Question 5, The correlation between income change and inflation rate is r=-0.499, $p<0.01$ while the correlation between home value change and inflation rate is r=-0.309, p=0.047. This indicates a negative relationship between income change and home value change with inflation rate.

At the time of determining my questions to analysis, I had not be able to find a good resource for minimum wage over time in 2022 dollars. However, I did locate a source and was able to add a by-year minimum wage variable. Perhaps the most critical correlation that I ran was between inflation adjusted minimum wage and inflation rate, this yield a correlation coefficient of r = 0.023, p=0.886) indicating no relationship.

Implications

The implications of these results are somewhat inconclusive. Though there is no correlation between minimum wage and inflation rate, some of the other economic indicators do not paint as clear of a picture. However, the key focus of this analysis was to demonstrate that raising wages would not create inflation. Statistically speaking, these data do not show a relationship between minimum wage and inflation rate. Likewise, the ratio of housing sales to actual minimum wage annualized paints a stark picture, initial ratio values were about 12 and increase to 25 at year 2018. This is a very important finding because the US has not kept these ratio at least similar over time (as they are for median income), this gap has become so much larger and so much more challenging to overcome.

Limitations

Limitations of this analysis is that I relied mostly on correlation and scatter plots for my interpretation when this topic needs more robust modeling. Also, I think it would be better to review each variable selection and ensure they are appropriate. Because many of my sources are government surveys, there has a been different levels of manipulation to the data. I think I would need more details on the different data manipulations order to have more confidence in the some of the variables selected (for example, the growth percentages).

Concluding Remarks

This project allowed me to pull together many different aspects of R and statistics we have learned in this course. Some analyses are hampered by my beginning skill set in R but it is a very versatile statistical software package and I look forward to learning more.

Key analyses and plots

Table 1: Descriptive Statistics for final dataframe

Year	Hr_comp	Net_prod	Average_home_sale
Min. :1979	Min. : 82.02	Min. :106.8	Min. : 71900
1st Qu.:1989	1st Qu.: 85.20	1st Qu.:134.8	1st Qu.:145325
Median :2000	Median : 93.11	Median :176.5	Median :200025
Mean :1999	Mean : 95.96	Mean :180.9	Mean :215195
3rd Qu.:2010	3rd Qu.:107.92	3rd Qu.:235.8	3rd Qu.:290725
Max. :2018	Max. :115.62	Max. :252.9	Max. :382475

Table 2: Descriptive Statistics for final dataframe

Income_change	Home_change	Inflation_chg	MedIncome
Min. : 14.72	Min. :-4.590	Min. : 0.100	Min. :16461
1st Qu.: 39.74	1st Qu.: 1.488	1st Qu.: 1.750	1st Qu.:29165
Median : 53.48	Median : 4.650	Median : 2.700	Median :41343
Mean : 58.79	Mean : 4.796	Mean : 3.288	Mean :39468
3rd Qu.: 83.08	3rd Qu.: 8.688	3rd Qu.: 3.800	3rd Qu.:50188
Max. :106.56	Max. :14.800	Max. :13.300	Max. :63179

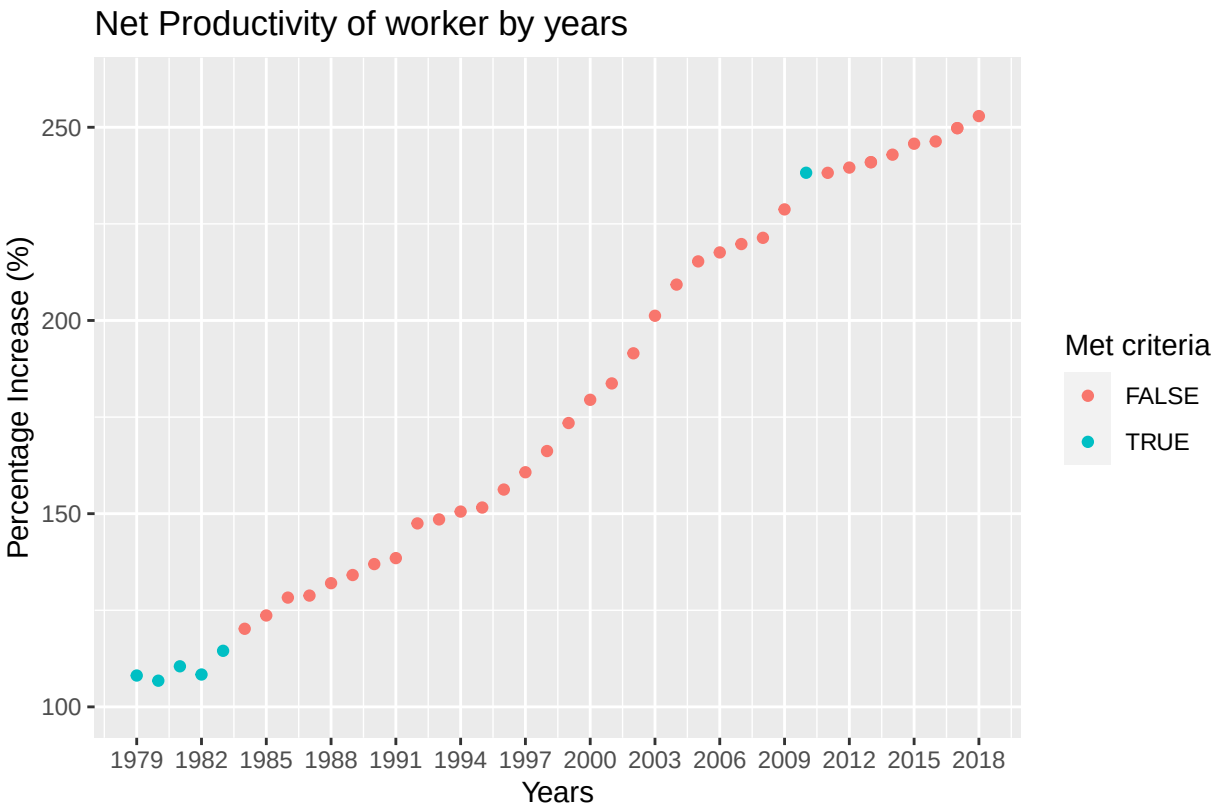
Table 3: Descriptive Statistics for final dataframe

Min_Wage	Actual_MW	Bot90p	Top1p
Min. : 6.380	Min. :2.900	Min. :-3.900	Min. : 0.00
1st Qu.: 7.183	1st Qu.:3.462	1st Qu.: 1.200	1st Qu.: 63.33
Median : 7.625	Median :5.150	Median :13.850	Median :113.50
Mean : 7.743	Mean :5.163	Mean : 9.376	Mean : 96.10
3rd Qu.: 7.978	3rd Qu.:7.250	3rd Qu.:15.700	3rd Qu.:137.50
Max. :10.470	Max. :7.250	Max. :23.900	Max. :157.80

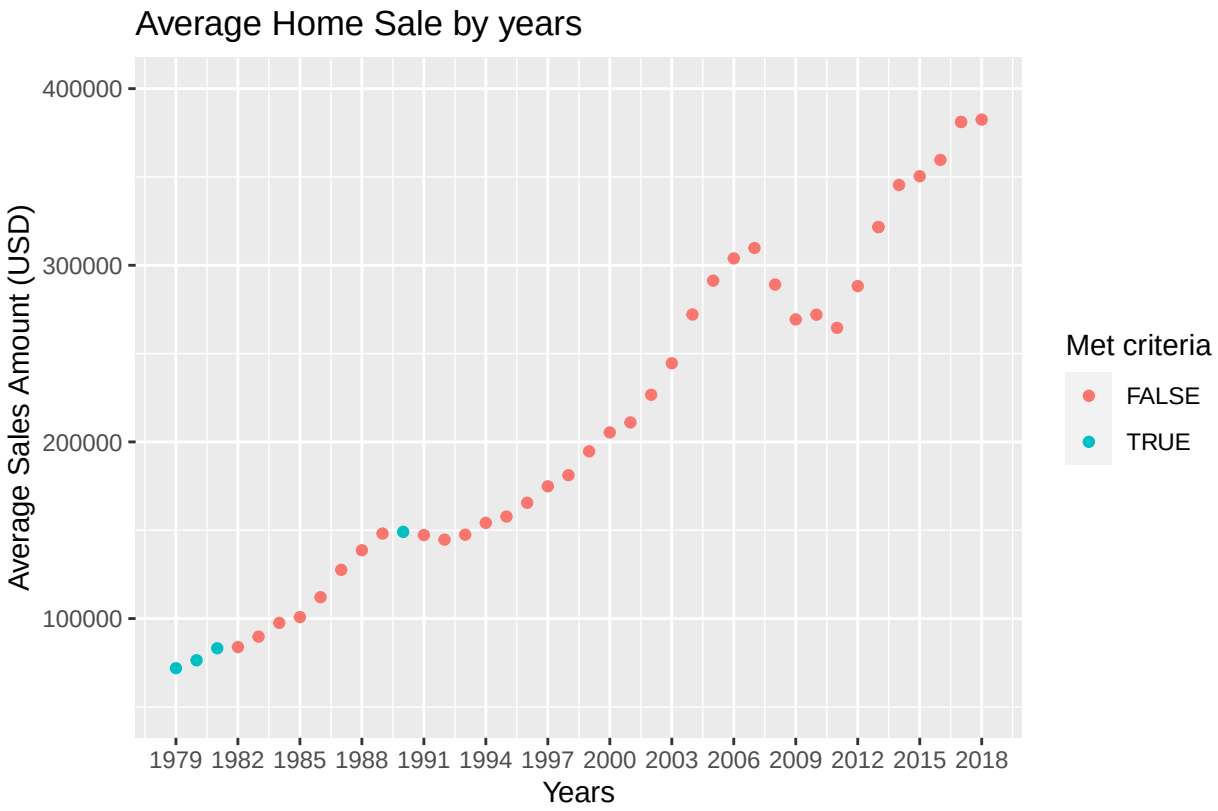
Table 4: Descriptive Statistics for final dataframe:

Top_tenthp	RH2I	RH2MW
Min. : 0.0	Min. :4.000	Min. :12.00
1st Qu.:124.7	1st Qu.:5.000	1st Qu.:17.00
Median :245.8	Median :5.000	Median :18.50
Mean :208.0	Mean :5.214	Mean :19.17
3rd Qu.:308.5	3rd Qu.:6.000	3rd Qu.:22.50
Max. :362.5	Max. :6.000	Max. :28.00

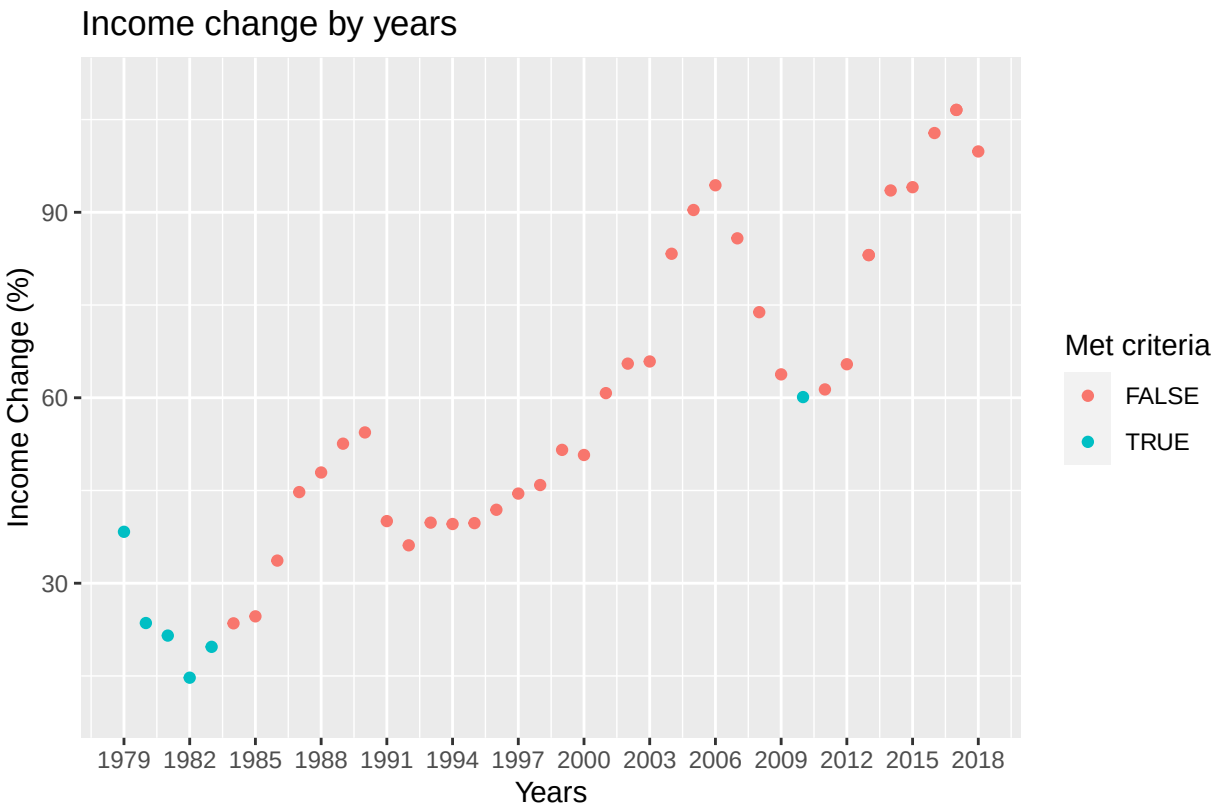
False = Less than $7.25 in 2022 dollars, True = Higher or equal to than $7.25 in 2022 dollars



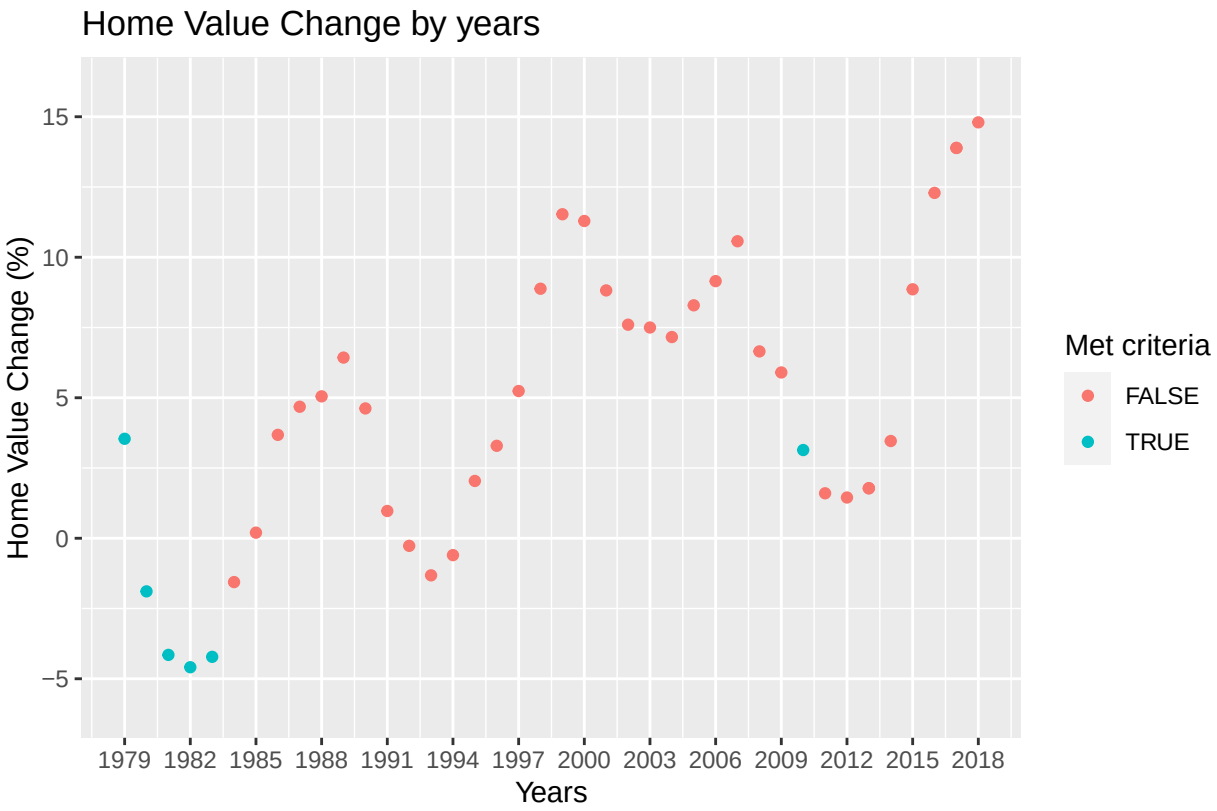
False = Less than $7.25 in 2022 dollars, True = Higher or equal to than $7.25 in 2022 dollars



False = Inflation change less than 5%, True = Inflation change greater or equal to 5%



False = Less than $7.25 in 2022 dollars, True = Higher or equal to than $7.25 in 2022 dollars



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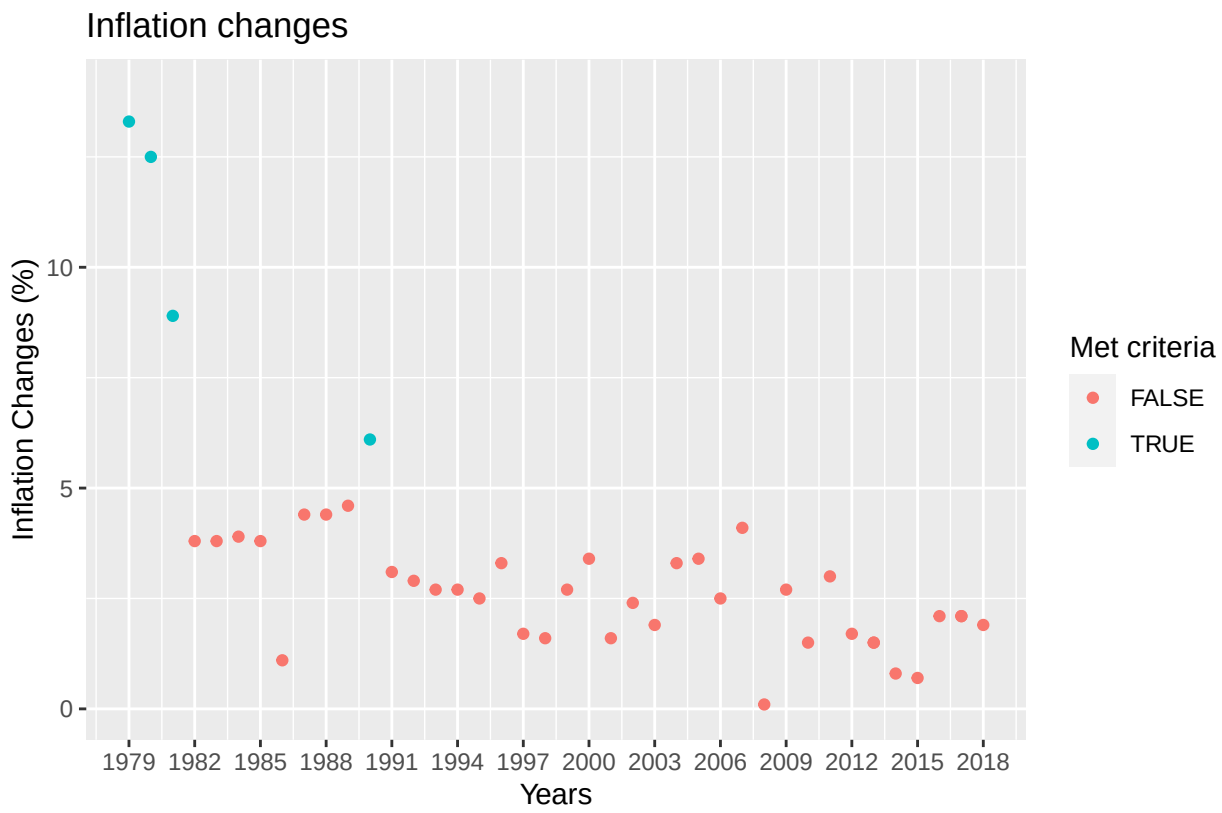
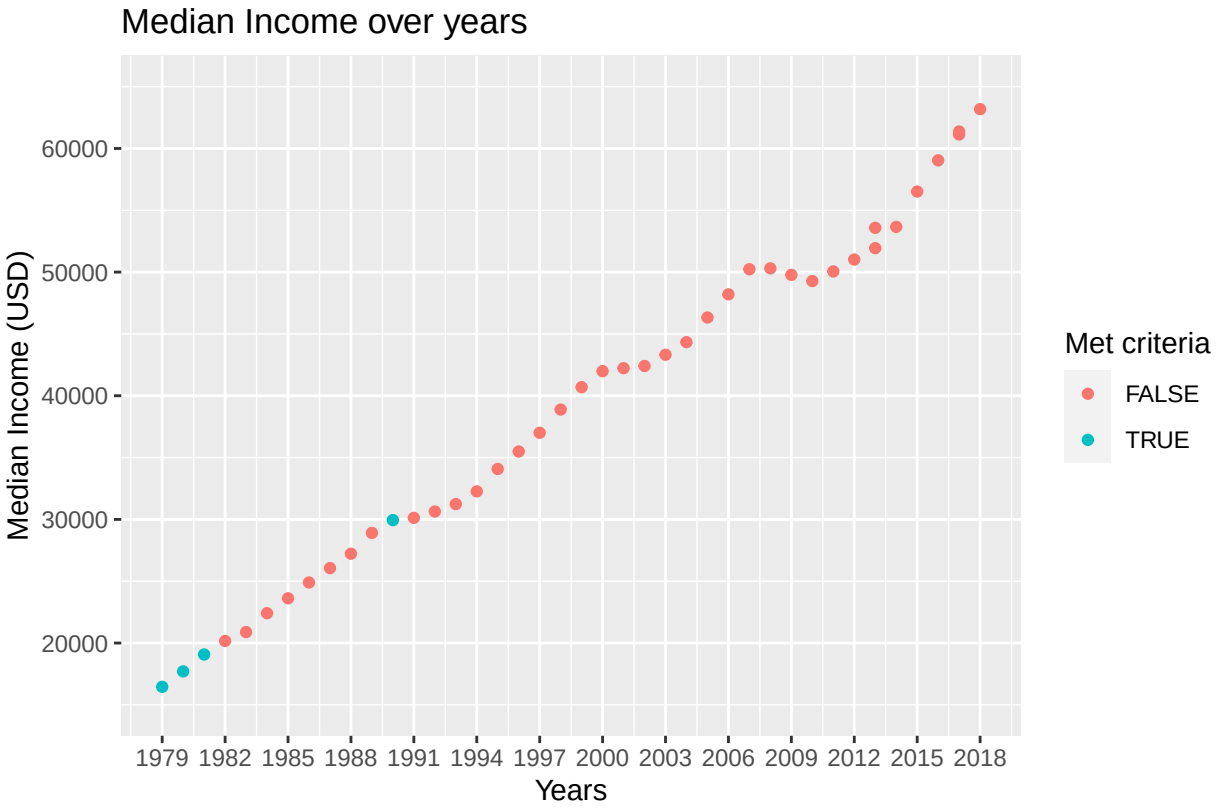
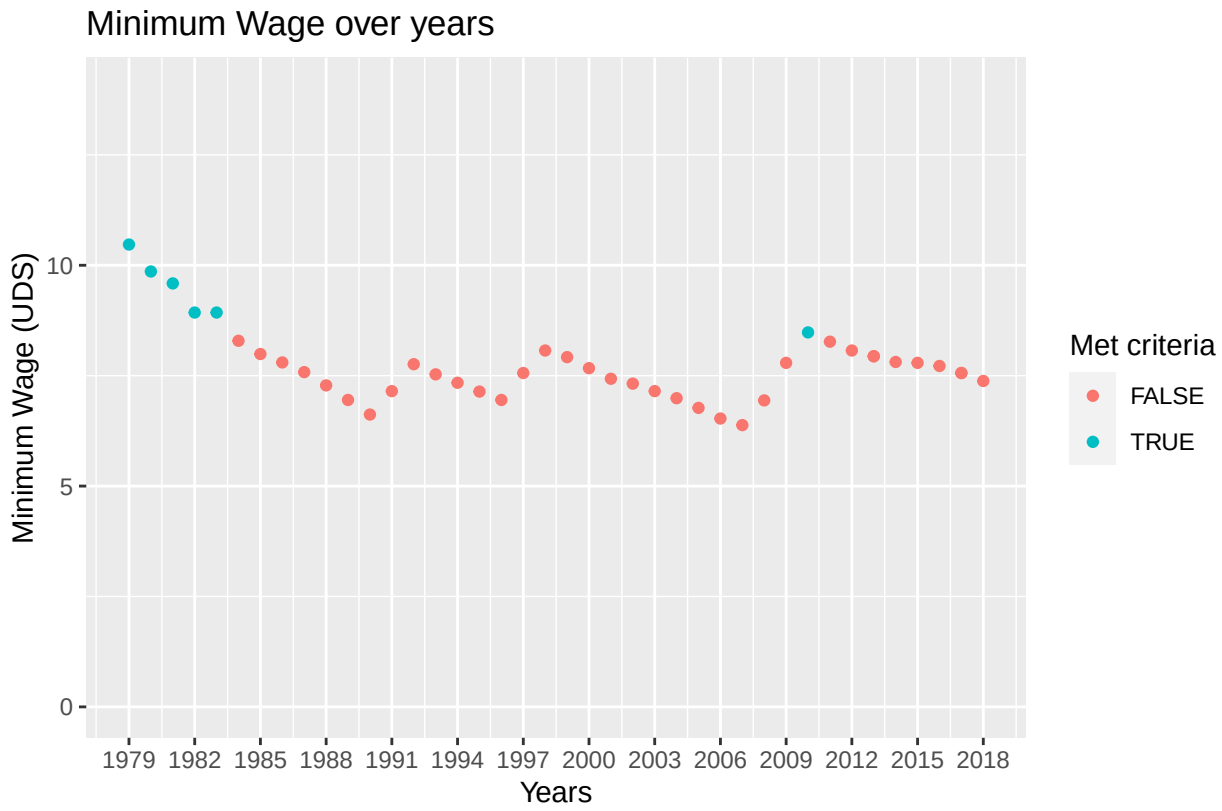


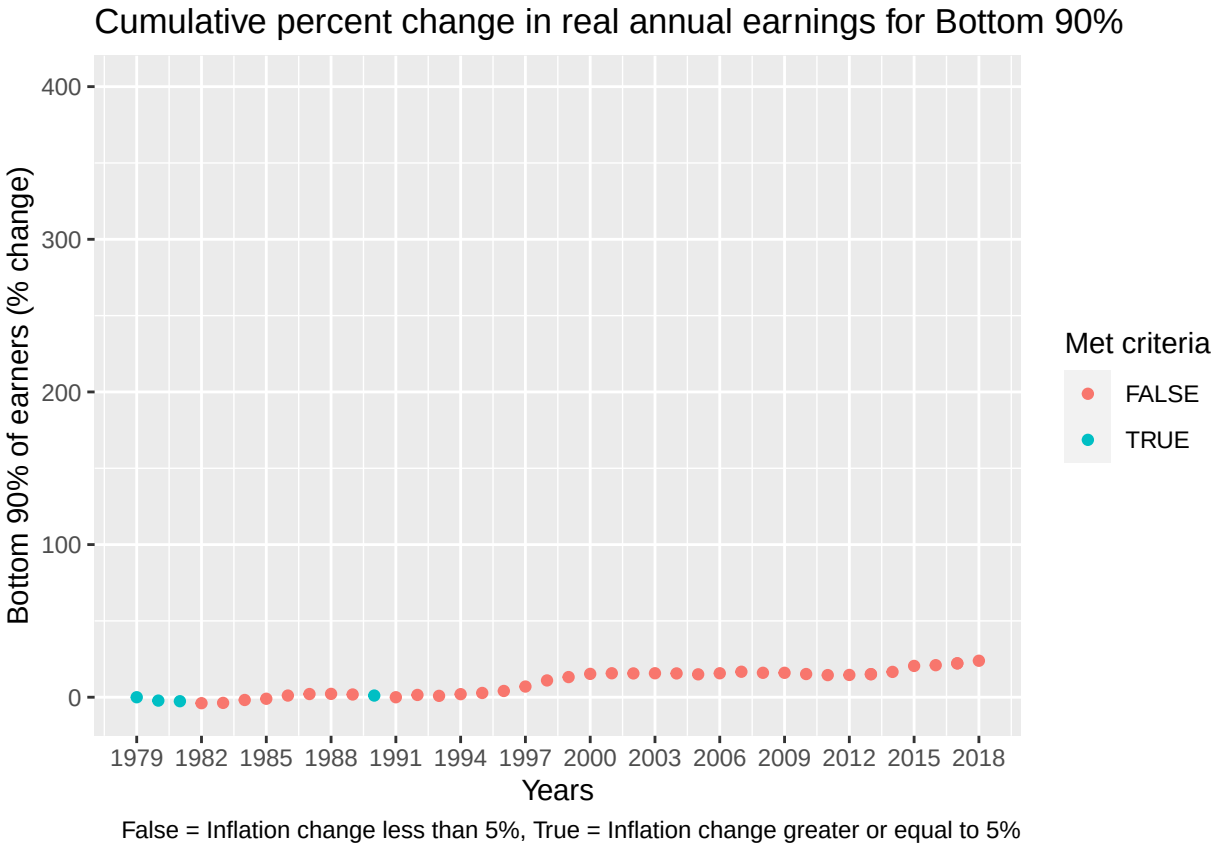
False = Inflation change less than 5%, True = Inflation change greater or equal to 5%



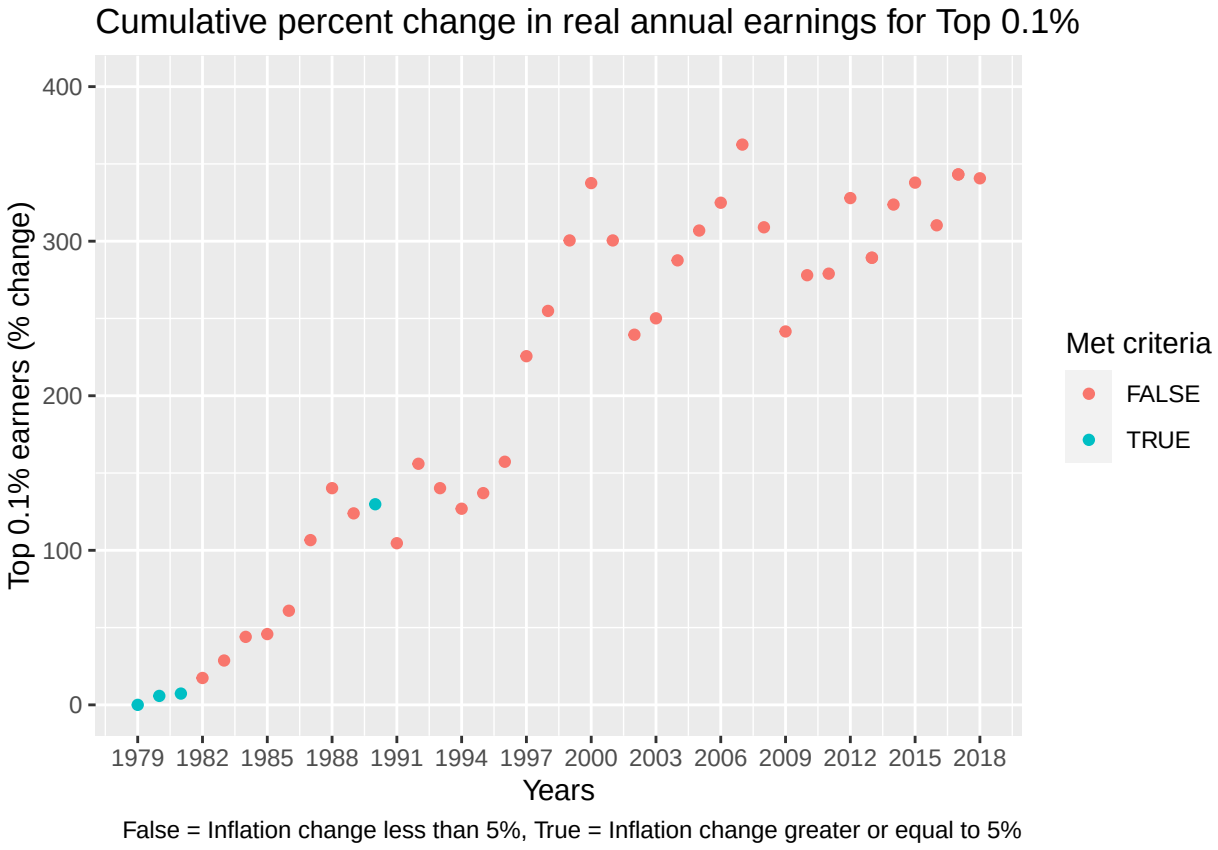
False = Inflation change less than 5%, True = Inflation change greater or equal to 5%



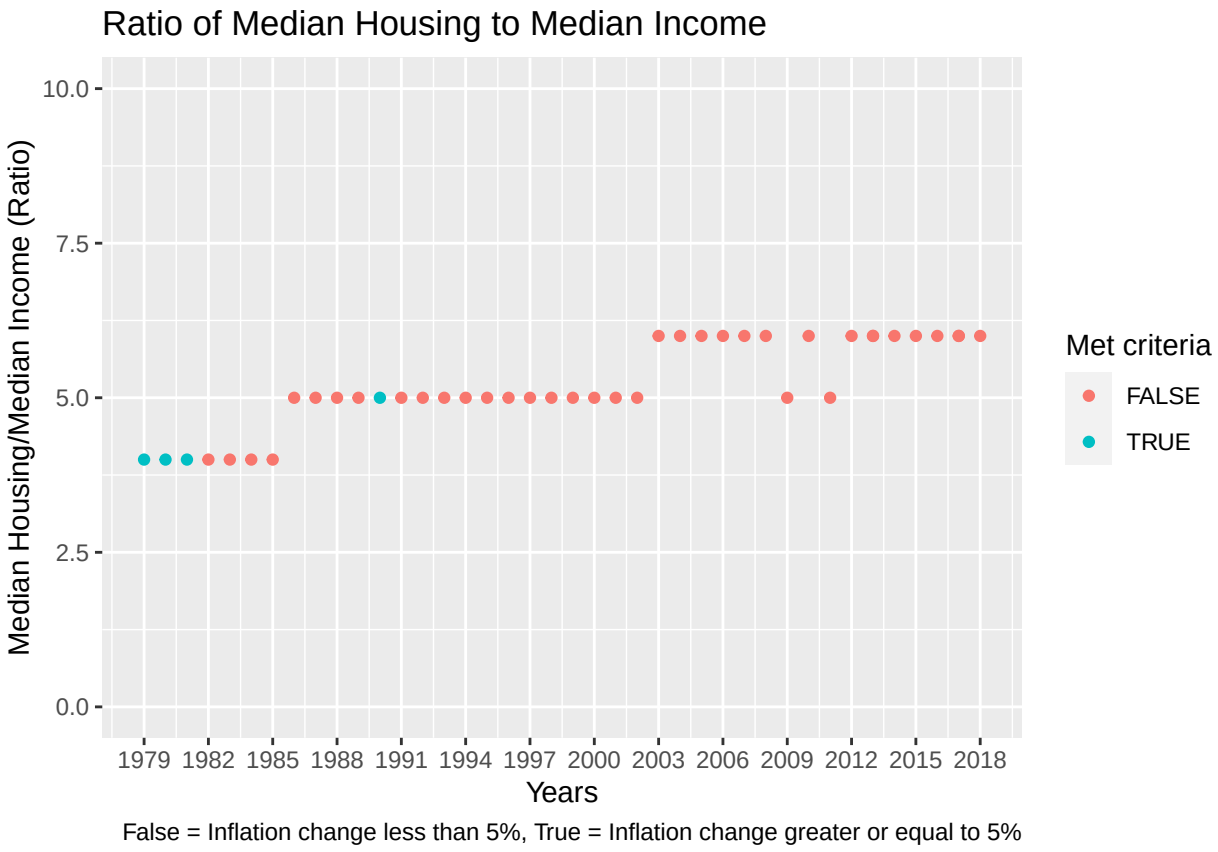
False = Less than $7.25 in 2022 dollars, True = Higher or equal to than $7.25 in 2022 dollars

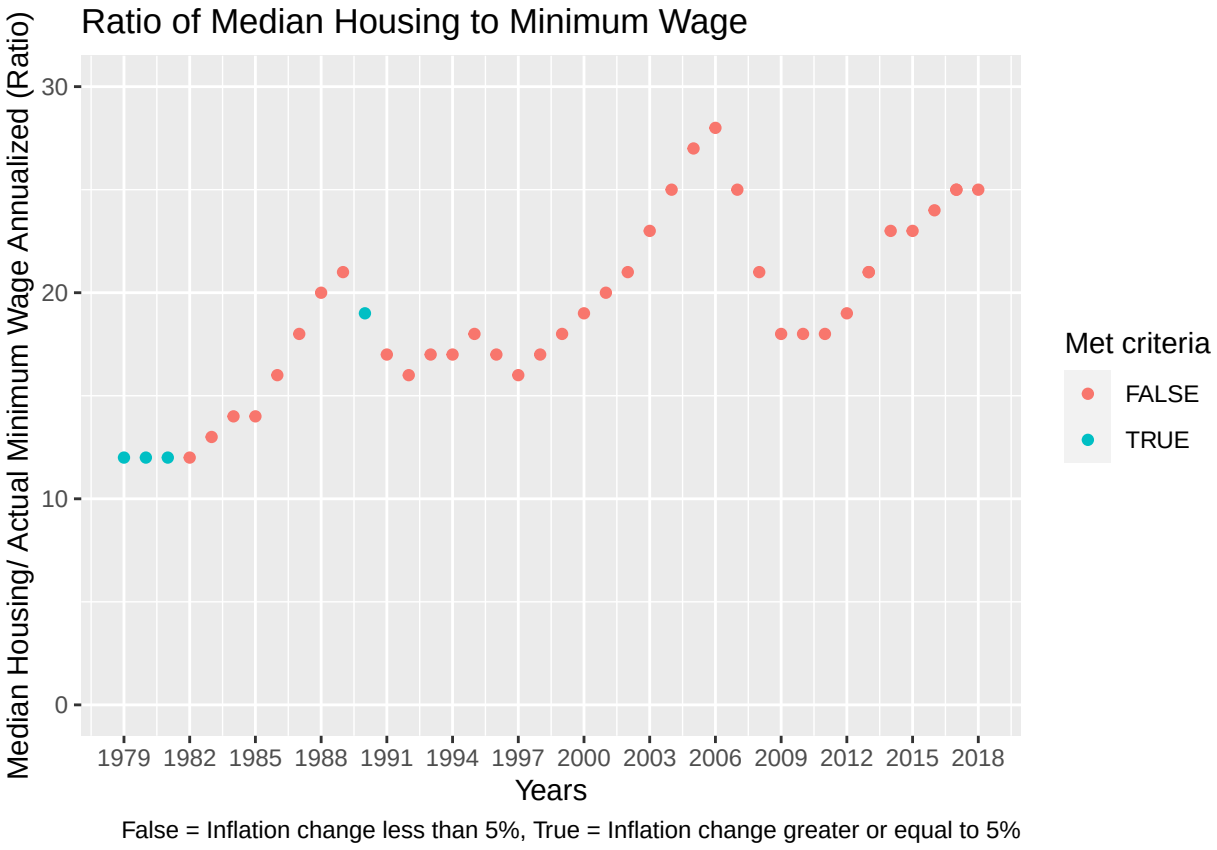

Cumulative percent change in real annual earnings for Bottom 90%
Bottom 90% of earners (% change)
400
300
200
100
0
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
Years
Met criteria
FALSE
TRUE
False = Inflation change less than 5%, True = Inflation change greater or equal to 5%

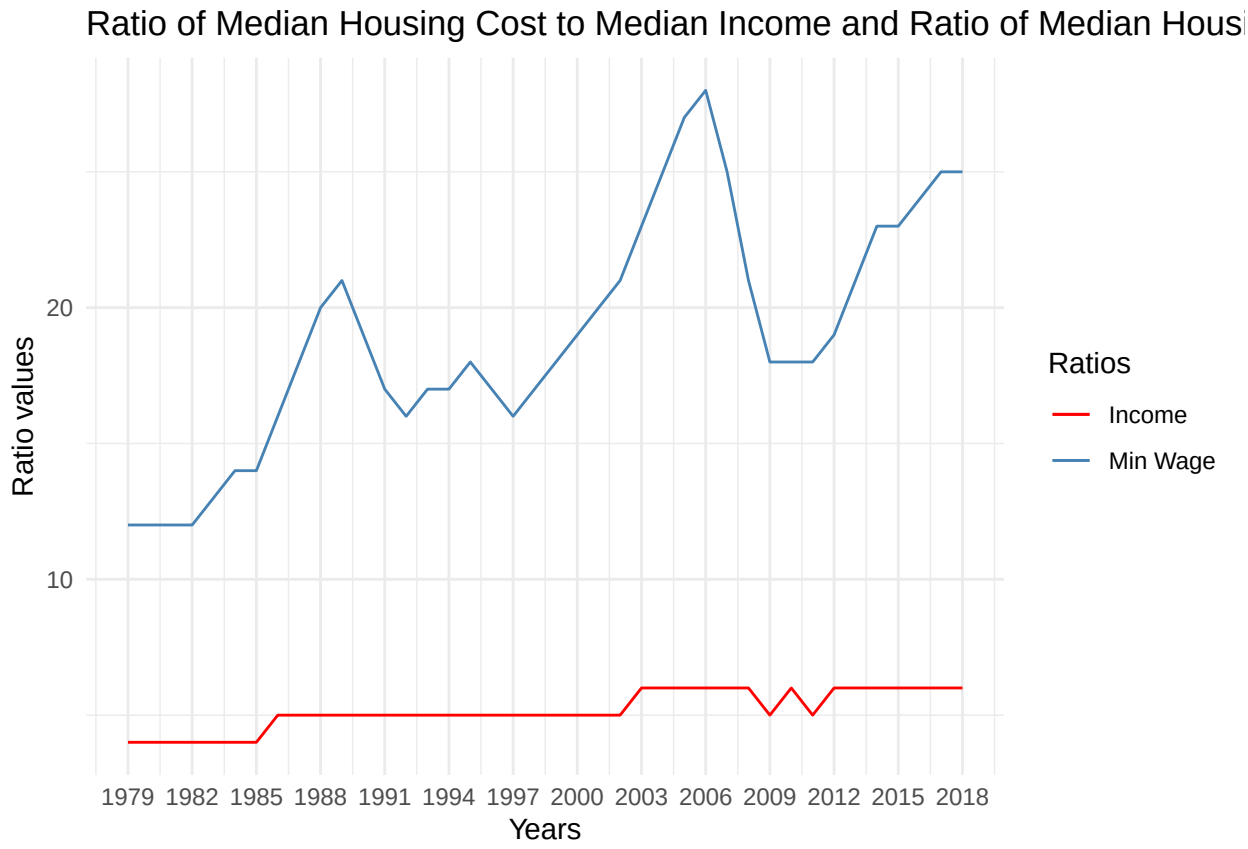

Cumulative percent change in real annual earnings for Top 1% Earners
Top 1% earners (% change)
400
300
200
100
0
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
Years
Met criteria
FALSE
TRUE
False = Inflation change less than 5%, True = Inflation change greater or equal to 5%



False = Inflation change less than 5%, True = Inflation change greater or equal to 5%


Ratio of Median Housing to Median Income
Median Housing/Median Income (Ratio)
10.0
7.5
5.0
2.5
0.0
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
Years
Met criteria
FALSE
TRUE
False = Inflation change less than 5%, True = Inflation change greater or equal to 5%


Ratio of Median Housing to Minimum Wage
Median Housing/ Actual Minimum Wage Annualized (Ratio)
30
20
10
0
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
Years
Met criteria
FALSE
TRUE
False = Inflation change less than 5%, True = Inflation change greater or equal to 5%

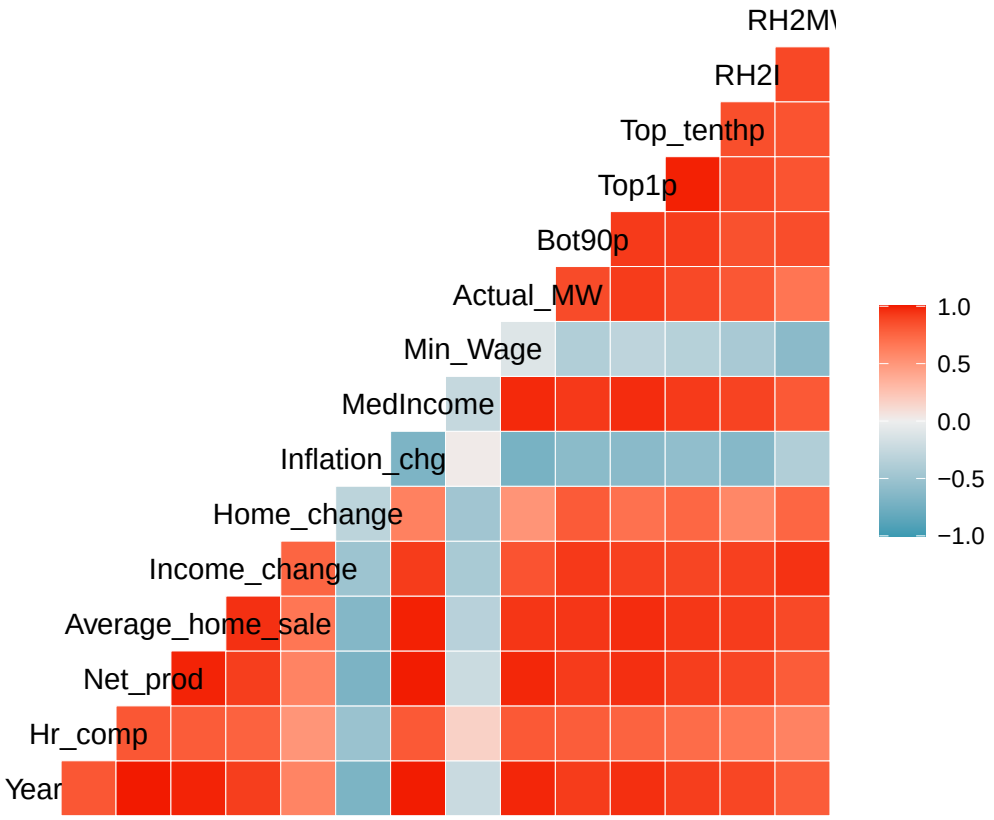



```
##                      Year Hr_comp Net_prod Average_home_sale Income_change
## Year                1.000   0.813    1.000             0.983         0.910
## Hr_comp             0.813   1.000    0.814             0.790         0.764
## Net_prod            1.000   0.814    1.000             0.983         0.910
## Average_home_sale   0.983   0.790    0.983             1.000         0.951
## Income_change       0.910   0.764    0.910             0.951         1.000
## Home_change         0.598   0.507    0.601             0.667         0.751
## Inflation_chg      -0.690  -0.516   -0.692            -0.648        -0.499
## MedIncome           0.997   0.806    0.997             0.988         0.917
## Min_Wage           -0.228   0.168   -0.227            -0.334        -0.427
## Actual_MW           0.976   0.806    0.976             0.935         0.829
## Bot90p              0.917   0.788    0.919             0.934         0.925
## Top1p               0.955   0.761    0.954             0.963         0.904
## Top_tenthp          0.910   0.717    0.910             0.932         0.886
## RH2I                0.881   0.668    0.884             0.915         0.901
## RH2MW               0.792   0.606    0.792             0.868         0.945
##                   Home_change Inflation_chg MedIncome Min_Wage Actual_MW Bot90p
## Year                    0.598        -0.690     0.997   -0.228     0.976  0.917
## Hr_comp                 0.507        -0.516     0.806    0.168     0.806  0.788
## Net_prod                0.601        -0.692     0.997   -0.227     0.976  0.919
## Average_home_sale       0.667        -0.648     0.988   -0.334     0.935  0.934
## Income_change           0.751        -0.499     0.917   -0.427     0.829  0.925
## Home_change             1.000        -0.309     0.613   -0.476     0.508  0.797
## Inflation_chg          -0.309         1.000    -0.687    0.023    -0.712 -0.604
## MedIncome               0.613        -0.687     1.000   -0.259     0.969  0.926
## Min_Wage               -0.476         0.023    -0.259    1.000    -0.109 -0.377
```

```
## Actual_MW              0.508        -0.712     0.969   -0.109     1.000  0.862
## Bot90p                 0.797        -0.604     0.926   -0.377     0.862  1.000
## Top1p                  0.691        -0.614     0.963   -0.299     0.916  0.923
## Top_tenthp             0.740        -0.570     0.923   -0.345     0.869  0.913
## RH2I                   0.582        -0.633     0.890   -0.431     0.813  0.840
## RH2MW                  0.746        -0.379     0.806   -0.608     0.672  0.853
##                     Top1p Top_tenthp   RH2I  RH2MW
## Year                0.955      0.910  0.881  0.792
## Hr_comp             0.761      0.717  0.668  0.606
## Net_prod            0.954      0.910  0.884  0.792
## Average_home_sale   0.963      0.932  0.915  0.868
## Income_change       0.904      0.886  0.901  0.945
## Home_change         0.691      0.740  0.582  0.746
## Inflation_chg      -0.614     -0.570 -0.633 -0.379
## MedIncome           0.963      0.923  0.890  0.806
## Min_Wage           -0.299     -0.345 -0.431 -0.608
## Actual_MW           0.916      0.869  0.813  0.672
## Bot90p              0.923      0.913  0.840  0.853
## Top1p               1.000      0.988  0.872  0.827
## Top_tenthp          0.988      1.000  0.847  0.830
## RH2I                0.872      0.847  1.000  0.874
## RH2MW               0.827      0.830  0.874  1.000

##                     Year Hr_comp Net_prod Average_home_sale Income_change
## Year                  NA   0.000    0.000             0.000         0.000
## Hr_comp            0.000      NA    0.000             0.000         0.000
## Net_prod           0.000   0.000       NA             0.000         0.000
## Average_home_sale  0.000   0.000    0.000                NA         0.000
## Income_change      0.000   0.000    0.000             0.000            NA
## Home_change        0.000   0.001    0.000             0.000         0.000
## Inflation_chg      0.000   0.000    0.000             0.000         0.001
## MedIncome          0.000   0.000    0.000             0.000         0.000
## Min_Wage           0.146   0.287    0.147             0.031         0.005
## Actual_MW          0.000   0.000    0.000             0.000         0.000
## Bot90p             0.000   0.000    0.000             0.000         0.000
## Top1p              0.000   0.000    0.000             0.000         0.000
## Top_tenthp         0.000   0.000    0.000             0.000         0.000
## RH2I               0.000   0.000    0.000             0.000         0.000
## RH2MW              0.000   0.000    0.000             0.000         0.000
##                    Home_change Inflation_chg MedIncome Min_Wage Actual_MW Bot90p
## Year                     0.000         0.000     0.000    0.146     0.000  0.000
## Hr_comp                  0.001         0.000     0.000    0.287     0.000  0.000
## Net_prod                 0.000         0.000     0.000    0.147     0.000  0.000
## Average_home_sale        0.000         0.000     0.000    0.031     0.000  0.000
## Income_change            0.000         0.001     0.000    0.005     0.000  0.000
## Home_change                 NA         0.047     0.000    0.001     0.001  0.000
## Inflation_chg            0.047            NA     0.000    0.886     0.000  0.000
## MedIncome                0.000         0.000        NA    0.098     0.000  0.000
## Min_Wage                 0.001         0.886     0.098       NA     0.492  0.014
## Actual_MW                0.001         0.000     0.000    0.492        NA  0.000
## Bot90p                   0.000         0.000     0.000    0.014     0.000     NA
## Top1p                    0.000         0.000     0.000    0.055     0.000  0.000
## Top_tenthp               0.000         0.000     0.000    0.025     0.000  0.000
## RH2I                     0.000         0.000     0.000    0.004     0.000  0.000
```

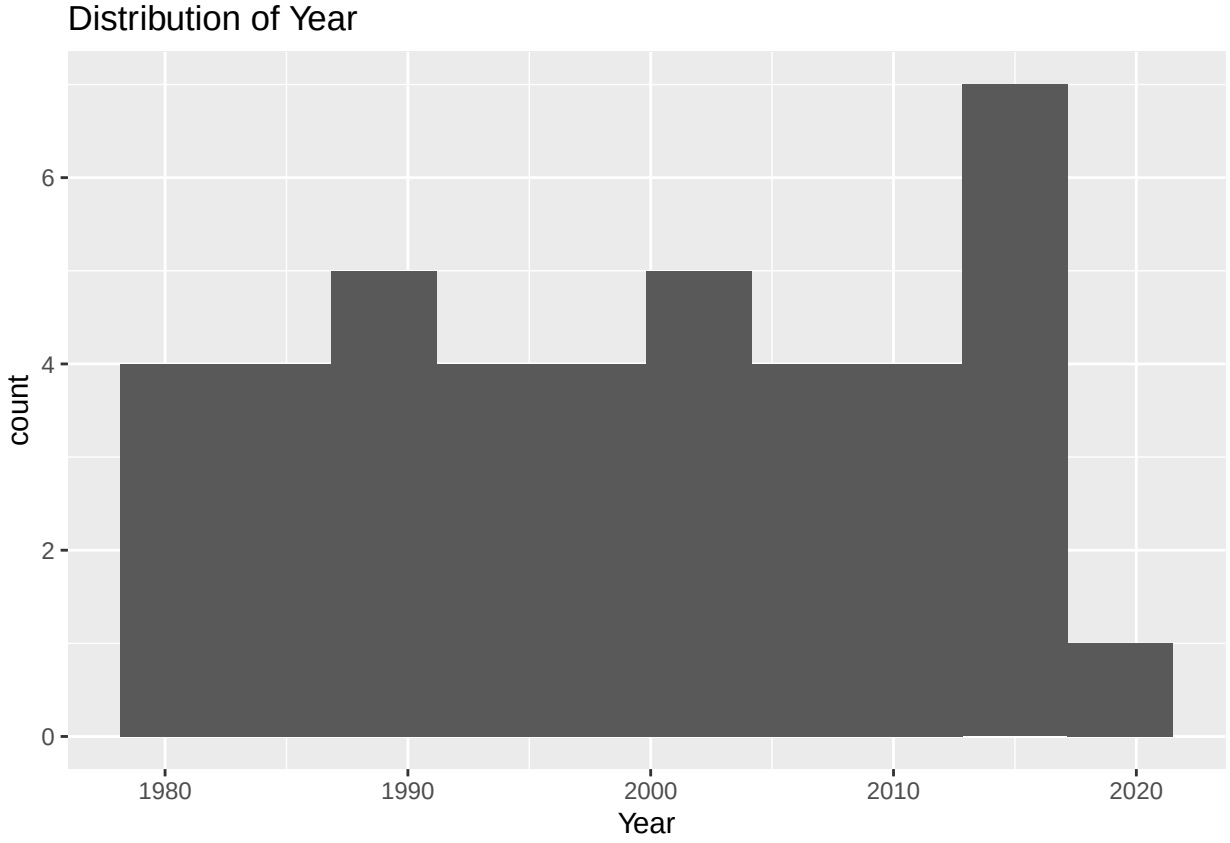
```
## RH2MW                 0.000         0.013     0.000     0.000      0.000  0.000
##                    Top1p Top_tenthp  RH2I RH2MW
## Year               0.000      0.000 0.000 0.000
## Hr_comp            0.000      0.000 0.000 0.000
## Net_prod           0.000      0.000 0.000 0.000
## Average_home_sale  0.000      0.000 0.000 0.000
## Income_change      0.000      0.000 0.000 0.000
## Home_change        0.000      0.000 0.000 0.000
## Inflation_chg      0.000      0.000 0.000 0.013
## MedIncome          0.000      0.000 0.000 0.000
## Min_Wage           0.055      0.025 0.004 0.000
## Actual_MW          0.000      0.000 0.000 0.000
## Bot90p             0.000      0.000 0.000 0.000
## Top1p                 NA      0.000 0.000 0.000
## Top_tenthp         0.000         NA 0.000 0.000
## RH2I               0.000      0.000    NA 0.000
## RH2MW              0.000      0.000 0.000    NA
```

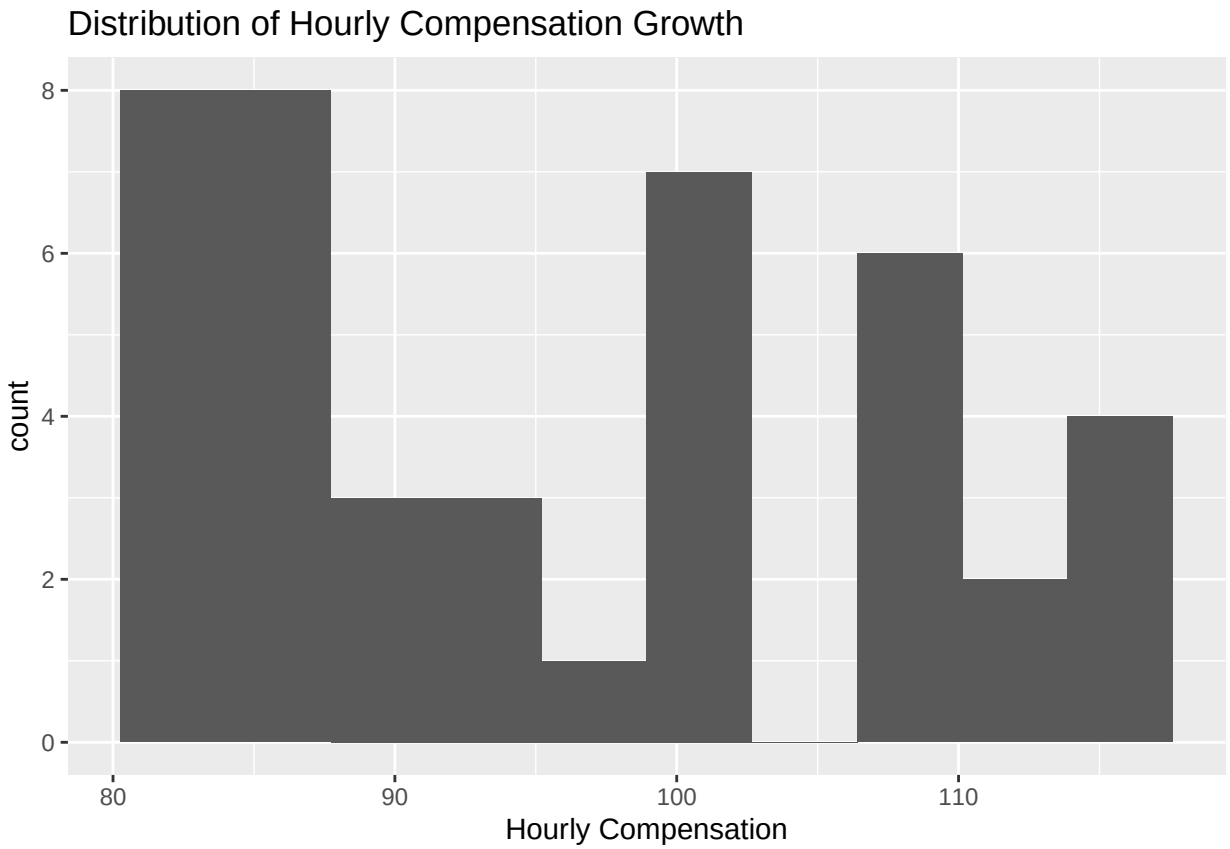


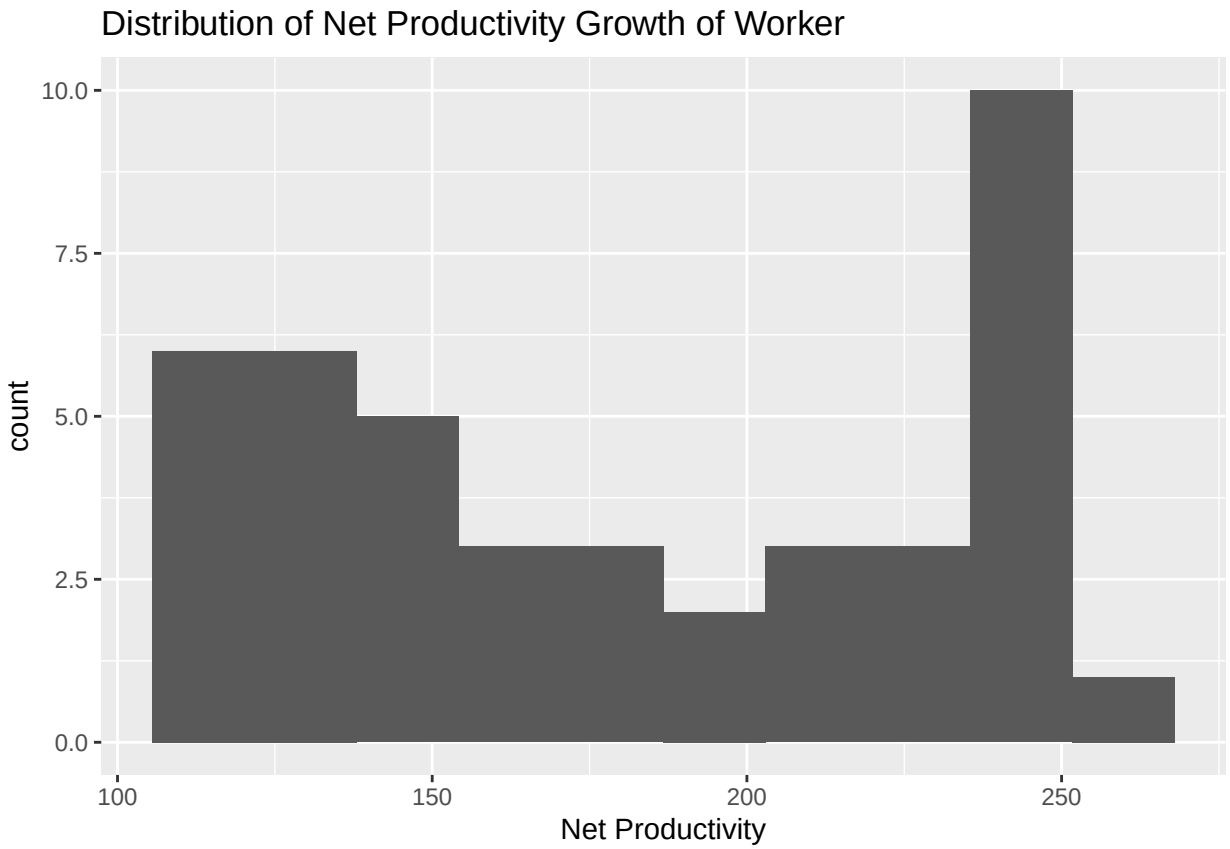
Exploratory data analyses for distribution and relationship

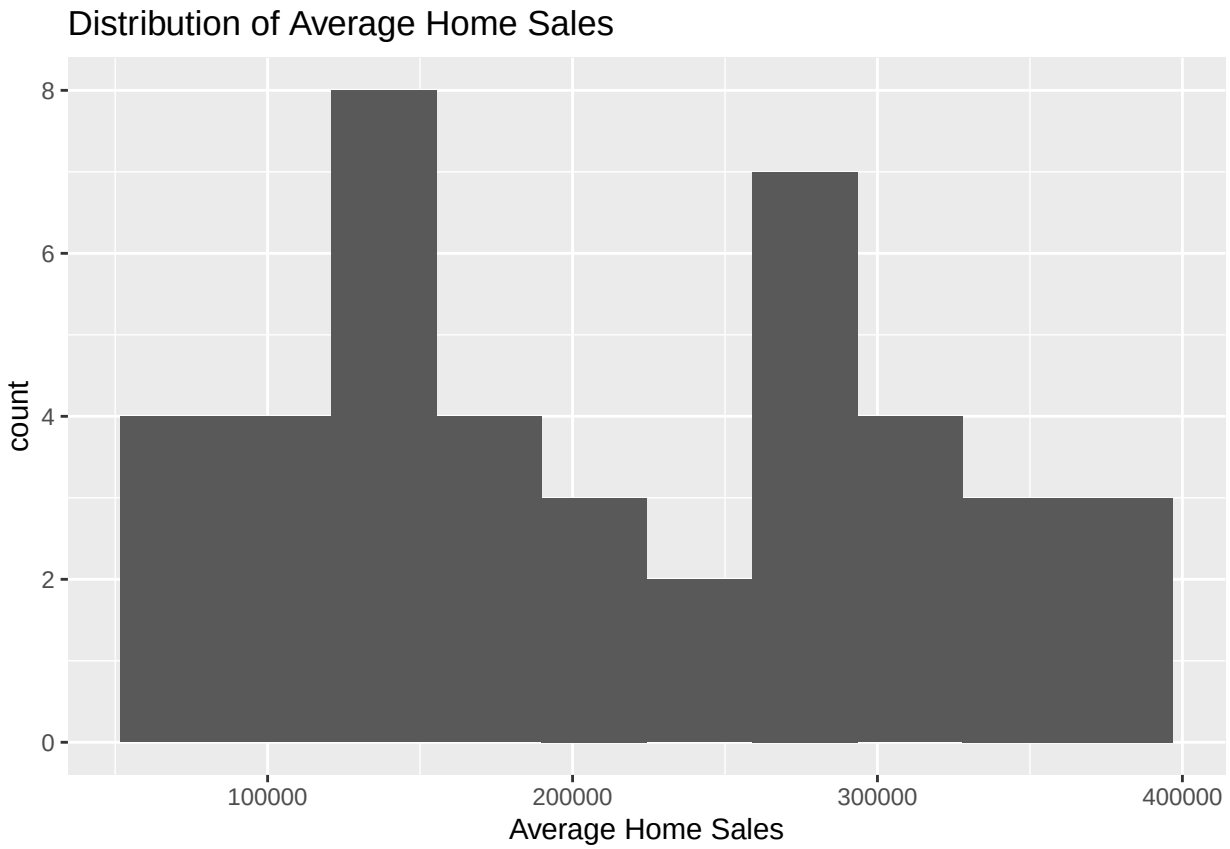
```
##   Year Hr_comp Net_prod Average_home_sale Income_change Home_change
## 1 1979   93.25   108.11             71900         38.32        3.54
## 2 1980   88.05   106.77             76375         23.56       -1.89
## 3 1981   87.36   110.50             83175         21.53       -4.15
```

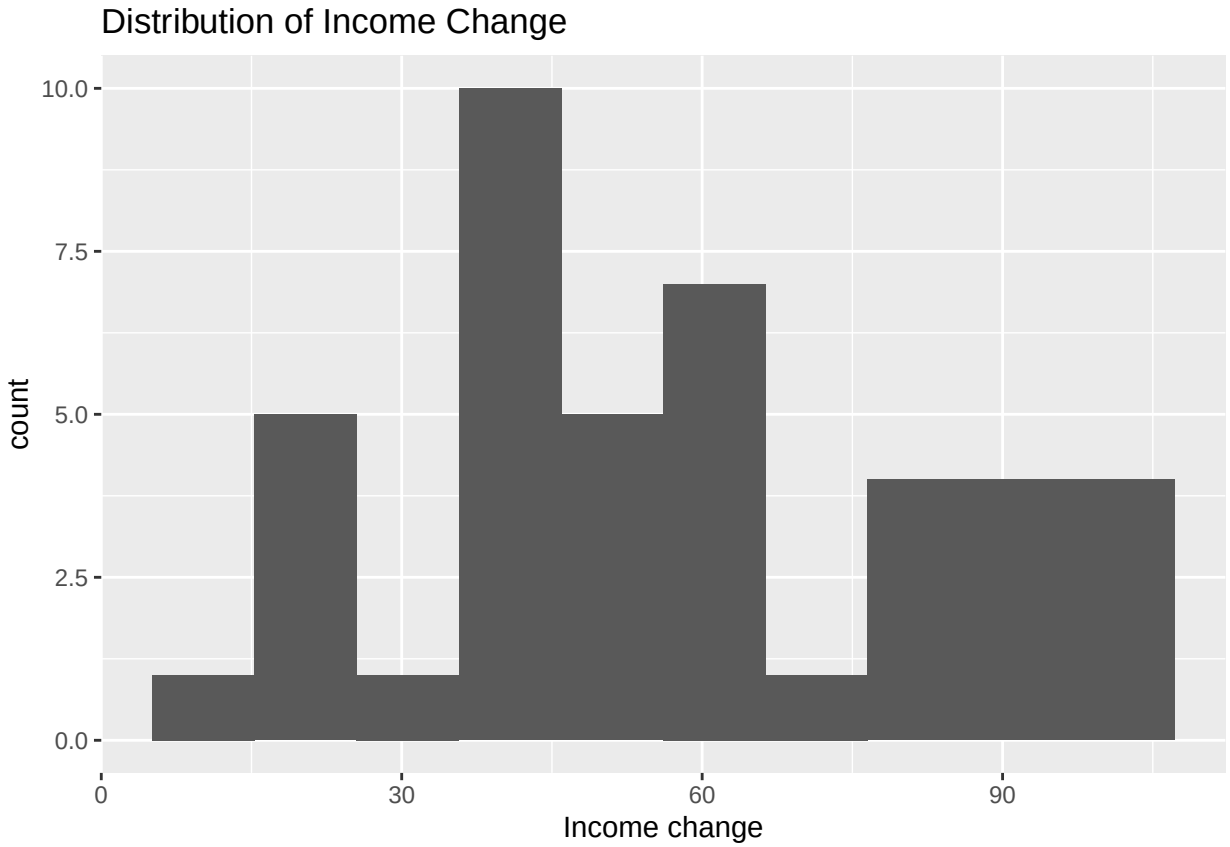
```
## 4 1982   87.70   108.37             83850         14.72       -4.59
## 5 1983   88.49   114.51             89775         19.71       -4.22
##   Inflation_chg InflatiYN InflatCYN MedIncome Min_Wage CURRYNN CURRYNC Bot90p
## 1          13.3         1      TRUE     16461    10.47       1    TRUE    0.0
## 2          12.5         1      TRUE     17710     9.86       1    TRUE   -2.2
## 3           8.9         1      TRUE     19074     9.59       1    TRUE   -2.6
## 4           3.8         0     FALSE     20171     8.93       1    TRUE   -3.9
## 5           3.8         0     FALSE     20885     8.93       1    TRUE   -3.7
##   Top1p Top_tenthp RH2I RH2MW
## 1   0.0        0.0    4  6867
## 2   3.4        5.8    4  7746
## 3   3.1        7.3    4  8673
## 4   9.5       17.4    4  9390
## 5  13.6       28.7    4 10053
```

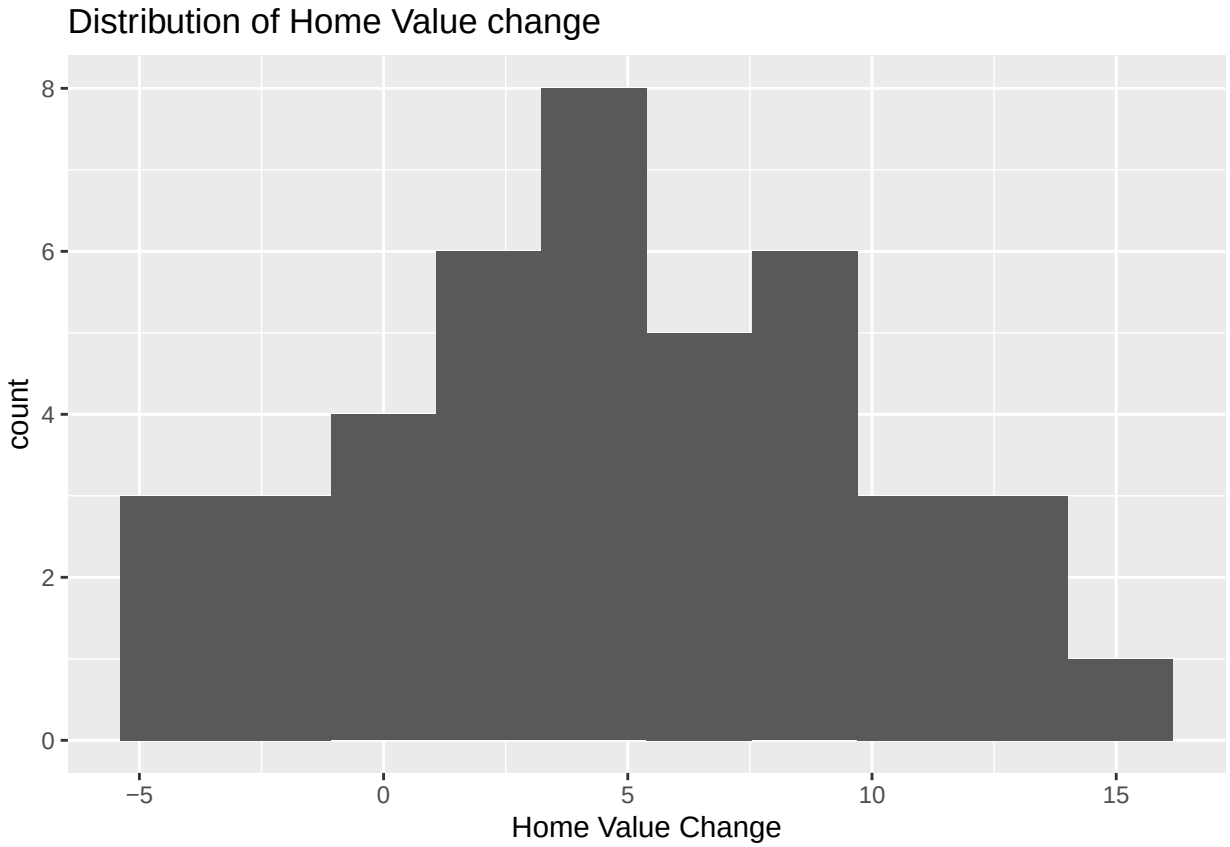


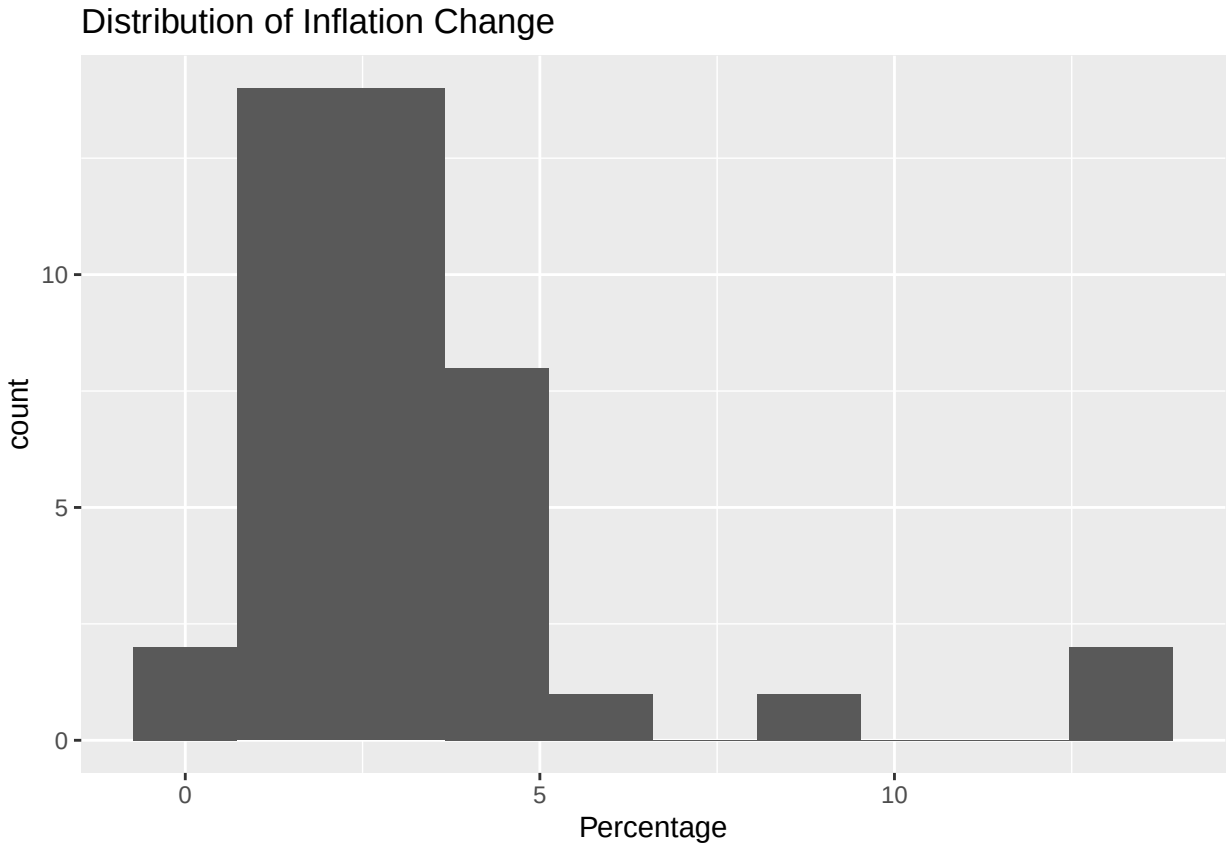

Distribution of Hourly Compensation Growth
count
8
6
4
2
0
80
90
100
110
Hourly Compensation

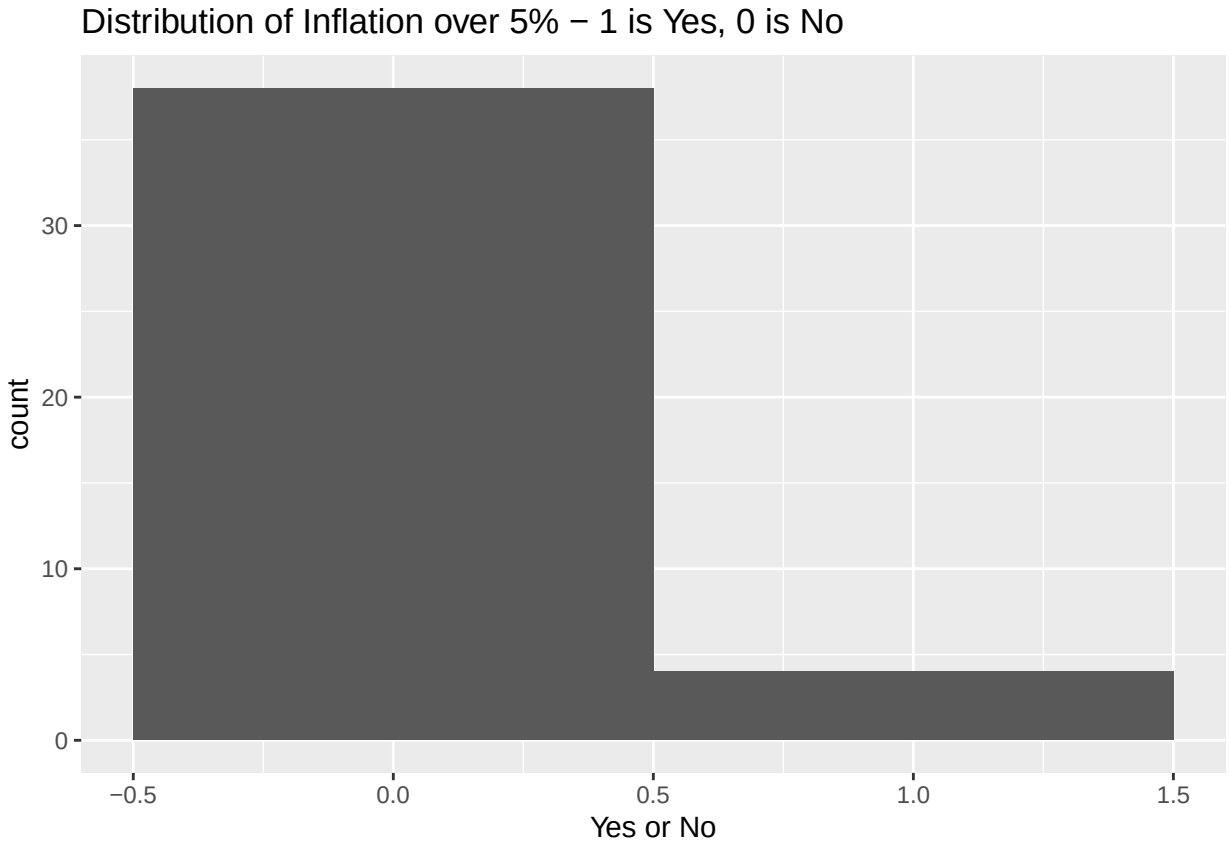

Distribution of Net Productivity Growth of Worker
count
10.0
7.5
5.0
2.5
0.0
100
150
200
250
Net Productivity

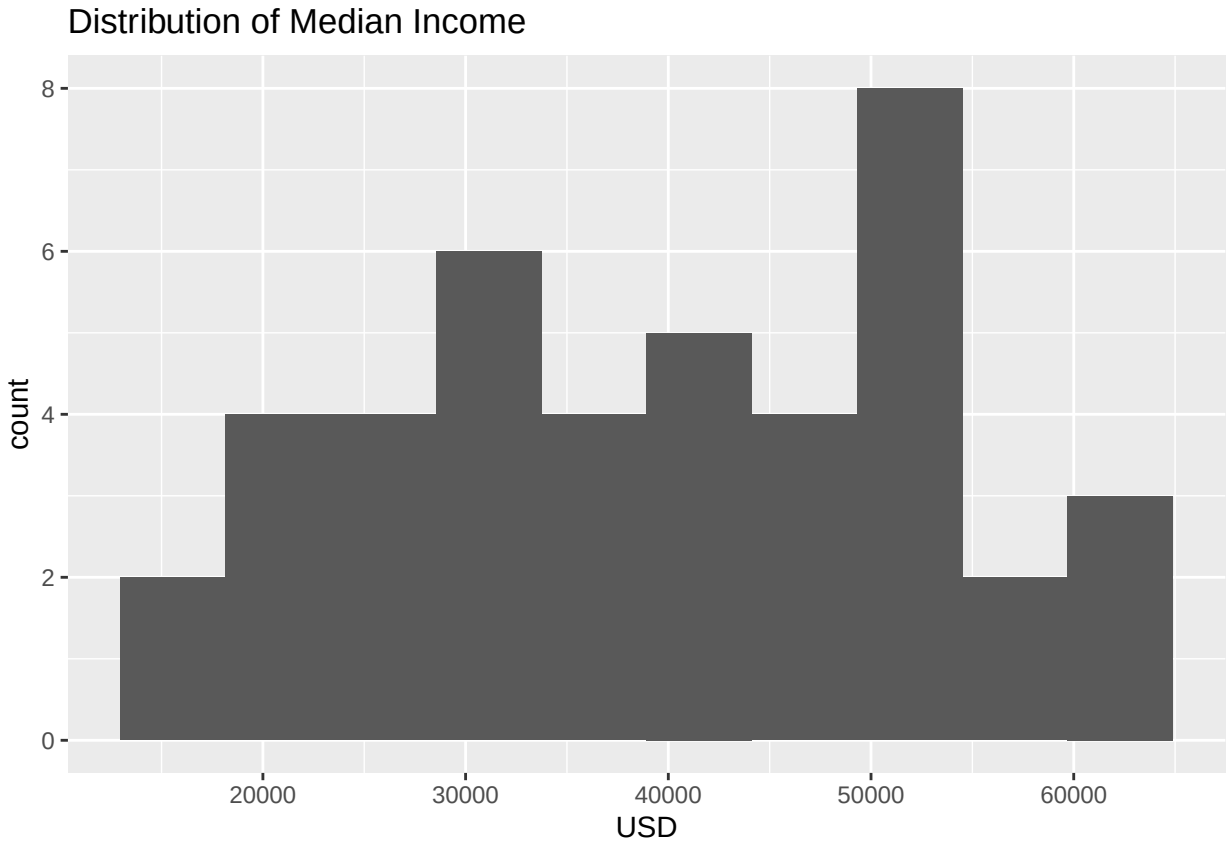

Distribution of Average Home Sales
count
0
2
4
6
8
100000
200000
300000
400000
Average Home Sales

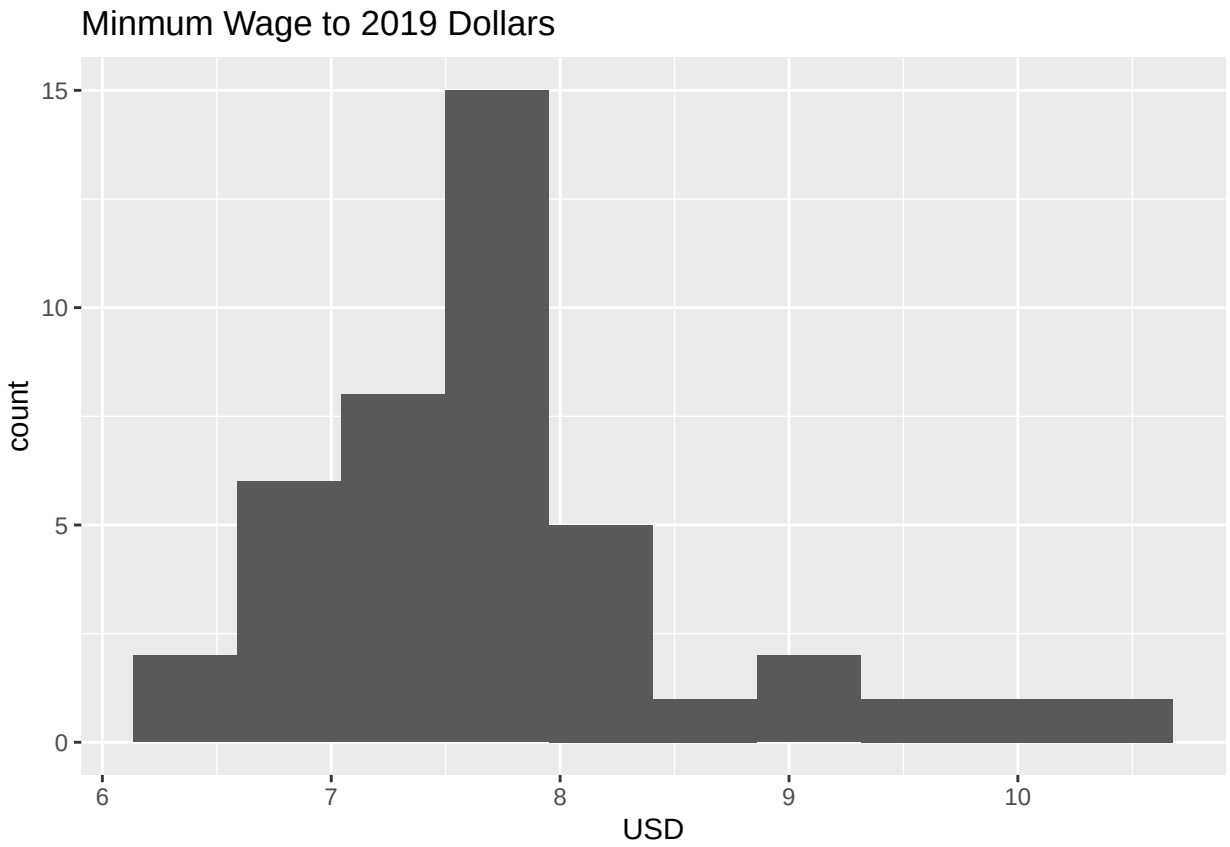

Distribution of Income Change
10.0
7.5
5.0
2.5
0.0
count
0
30
60
90
Income change

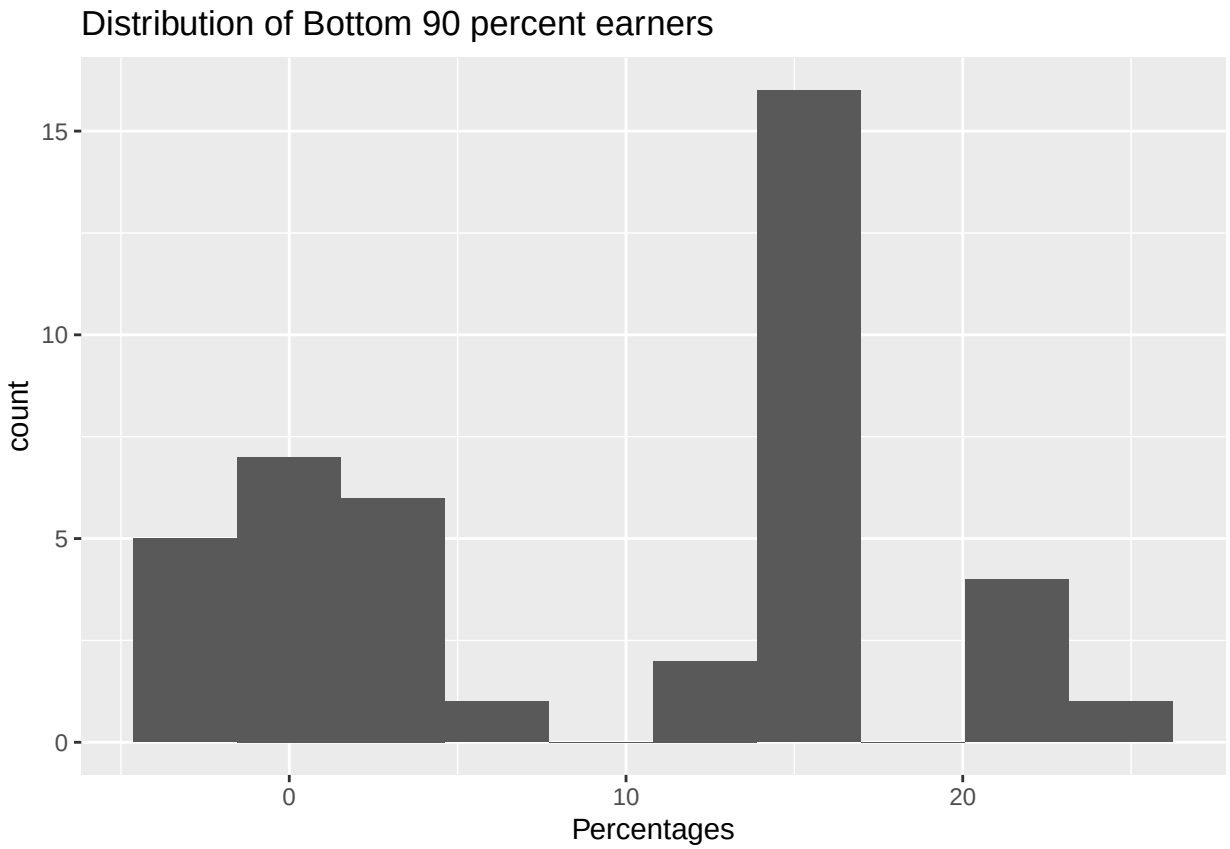

Distribution of Home Value change
count
8
6
4
2
0
−5
0
5
10
15
Home Value Change

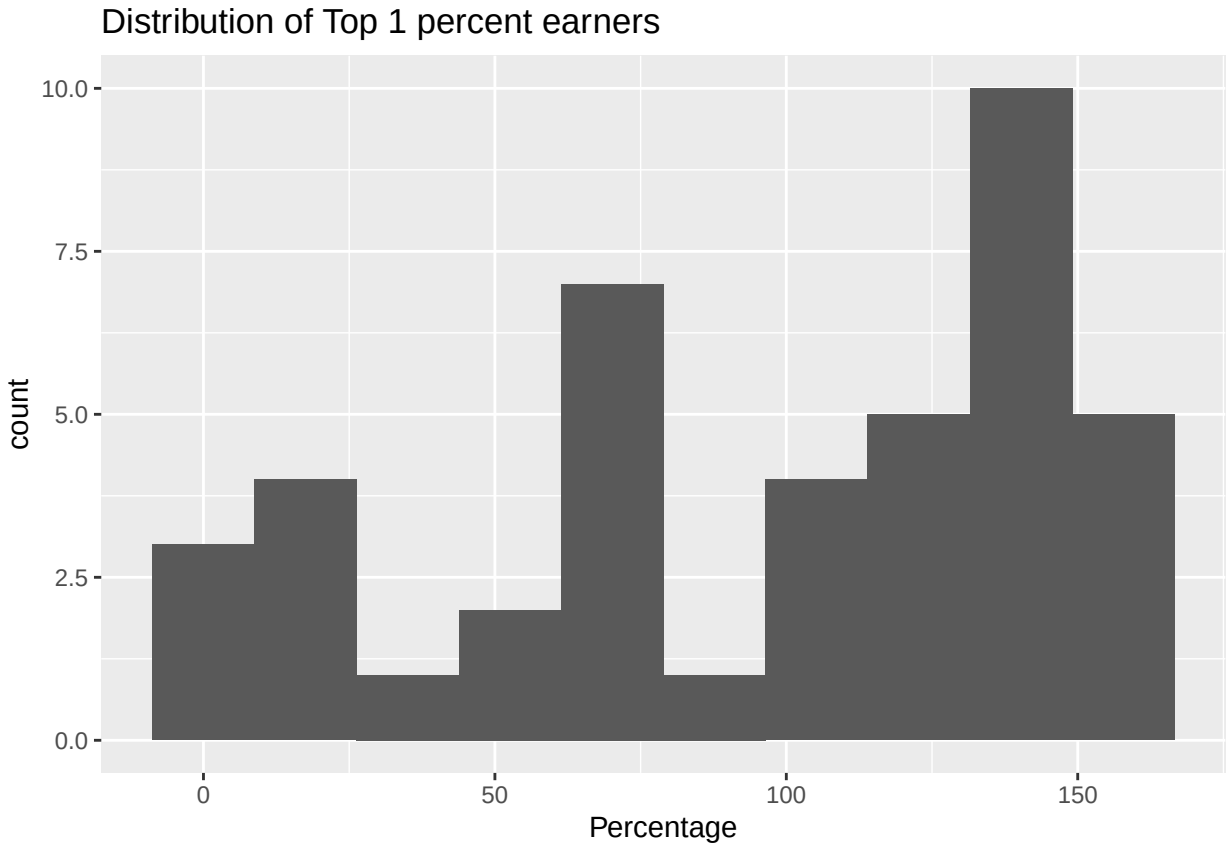

Distribution of Inflation Change
count
10
5
0
0
5
10
Percentage

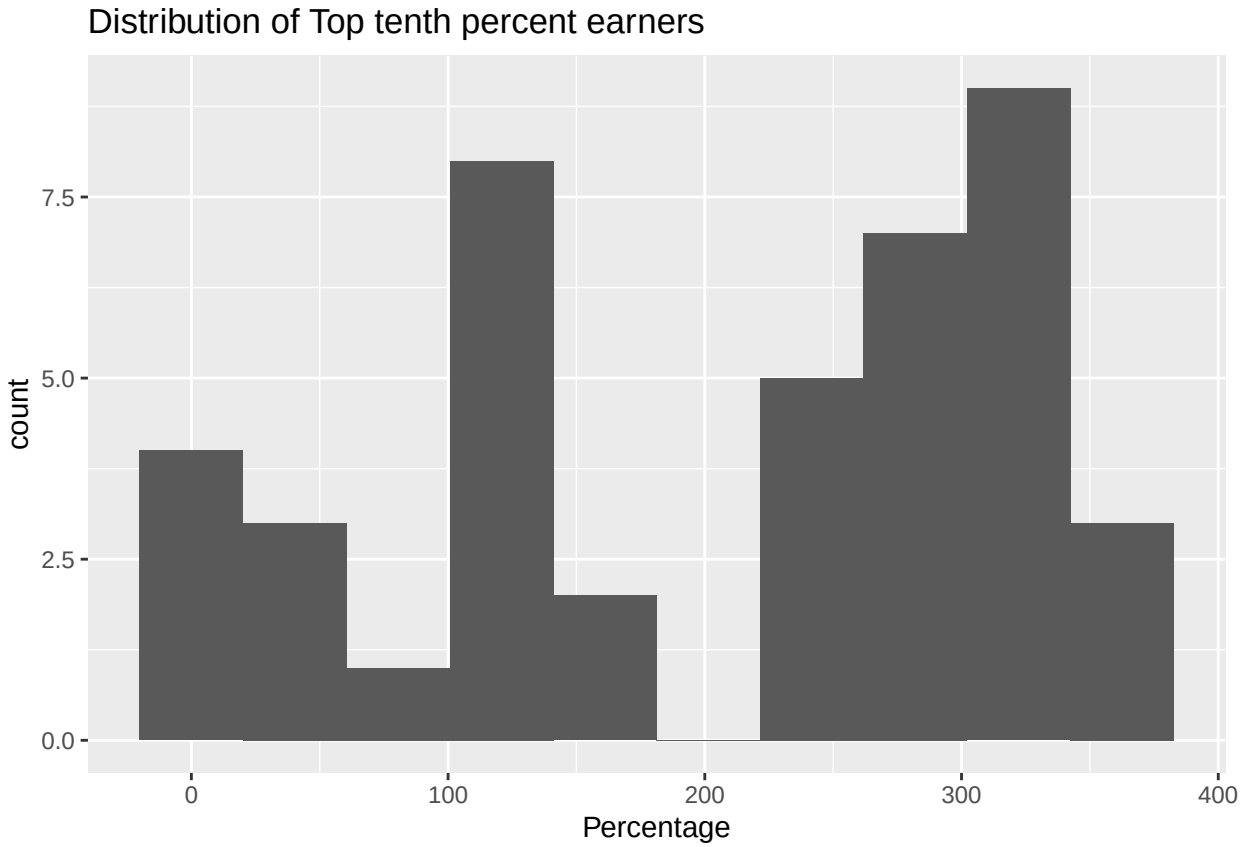

Distribution of Inflation over 5% − 1 is Yes, 0 is No
count
30
20
10
0
−0.5
0.0
0.5
1.0
1.5
Yes or No

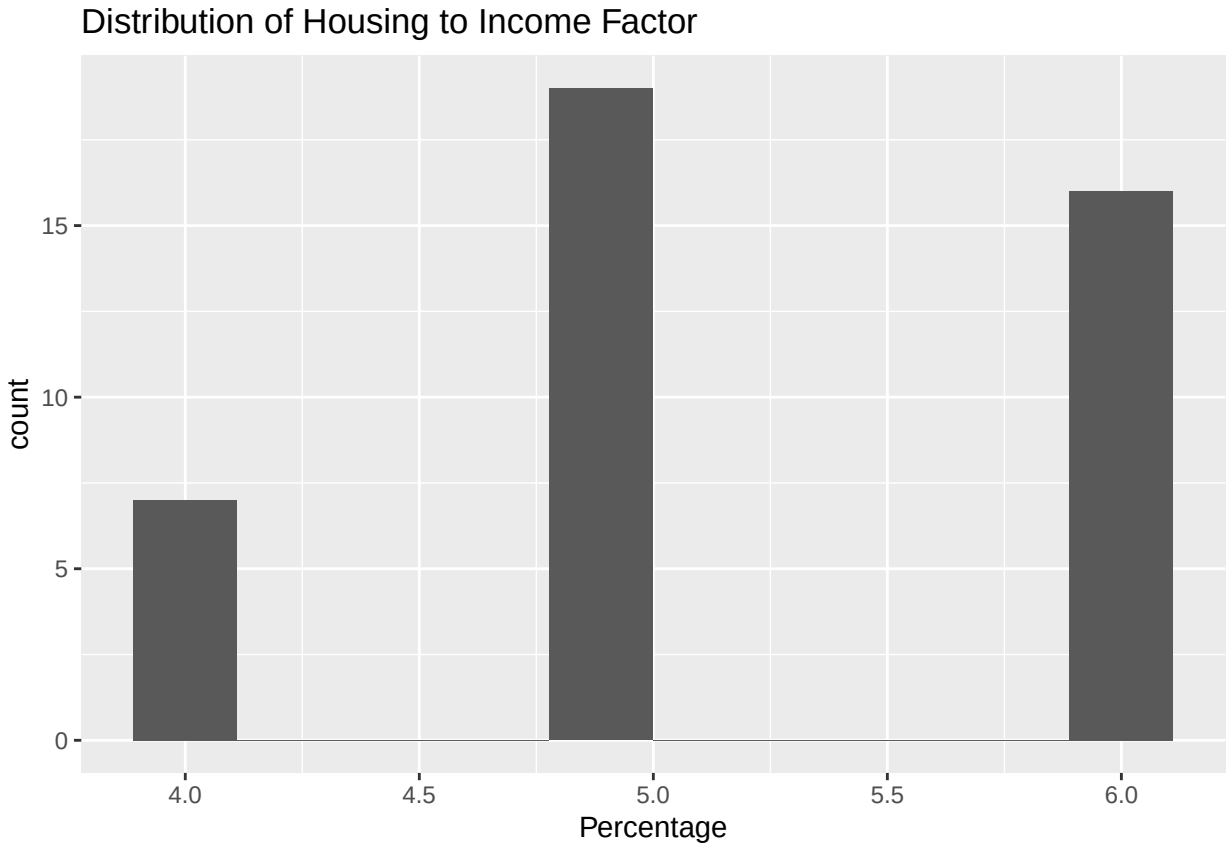

Distribution of Median Income
count
8
6
4
2
0
20000
30000
40000
50000
60000
USD

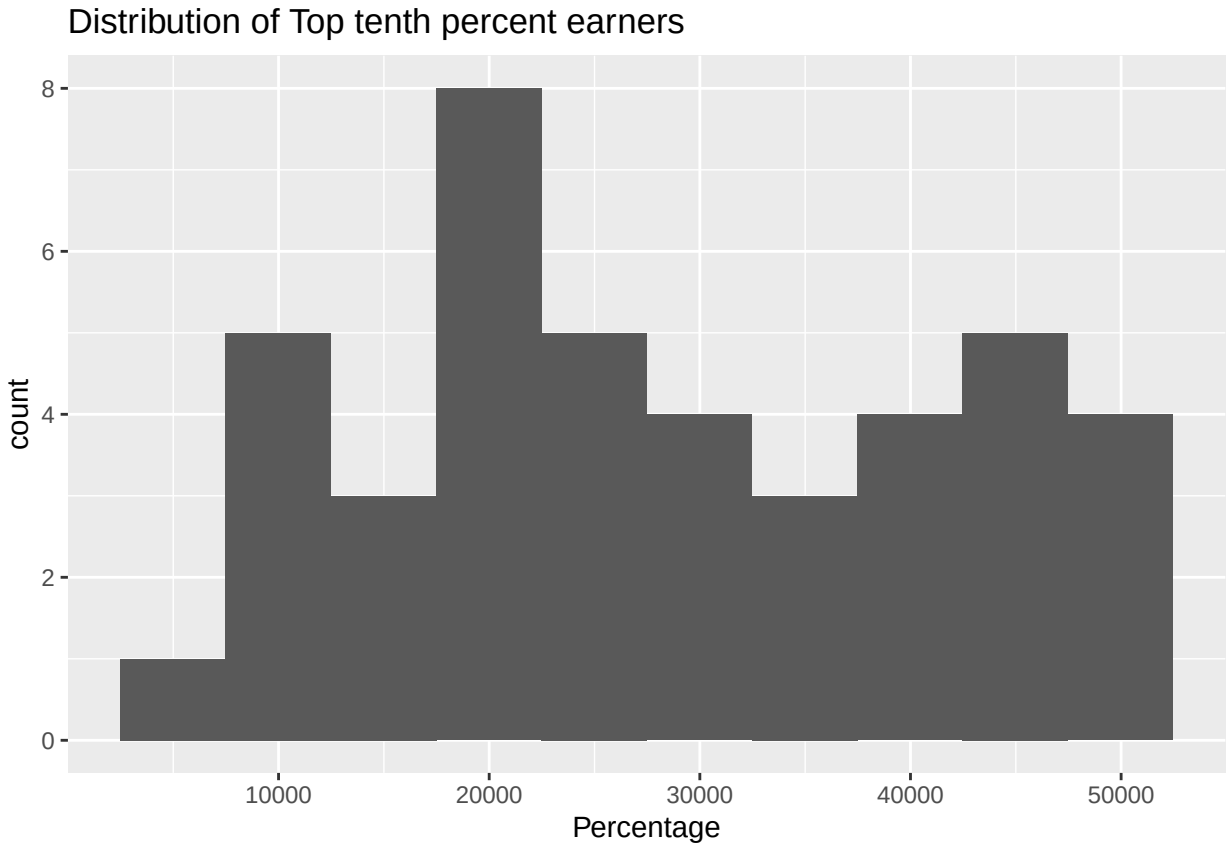

Minmum Wage to 2019 Dollars
15
10
5
0
count
6
7
8
9
10
USD

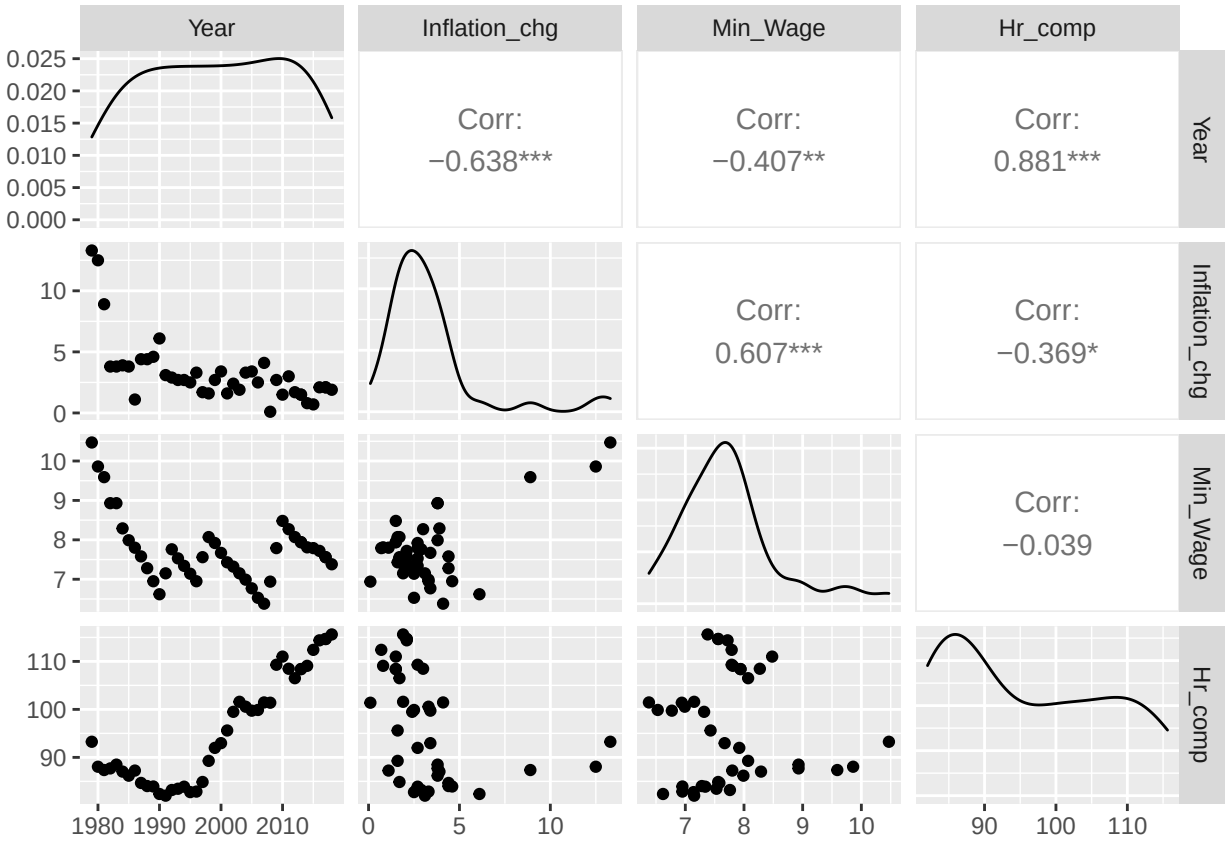

Distribution of Bottom 90 percent earners
count
15
10
5
0
0
10
20
Percentages

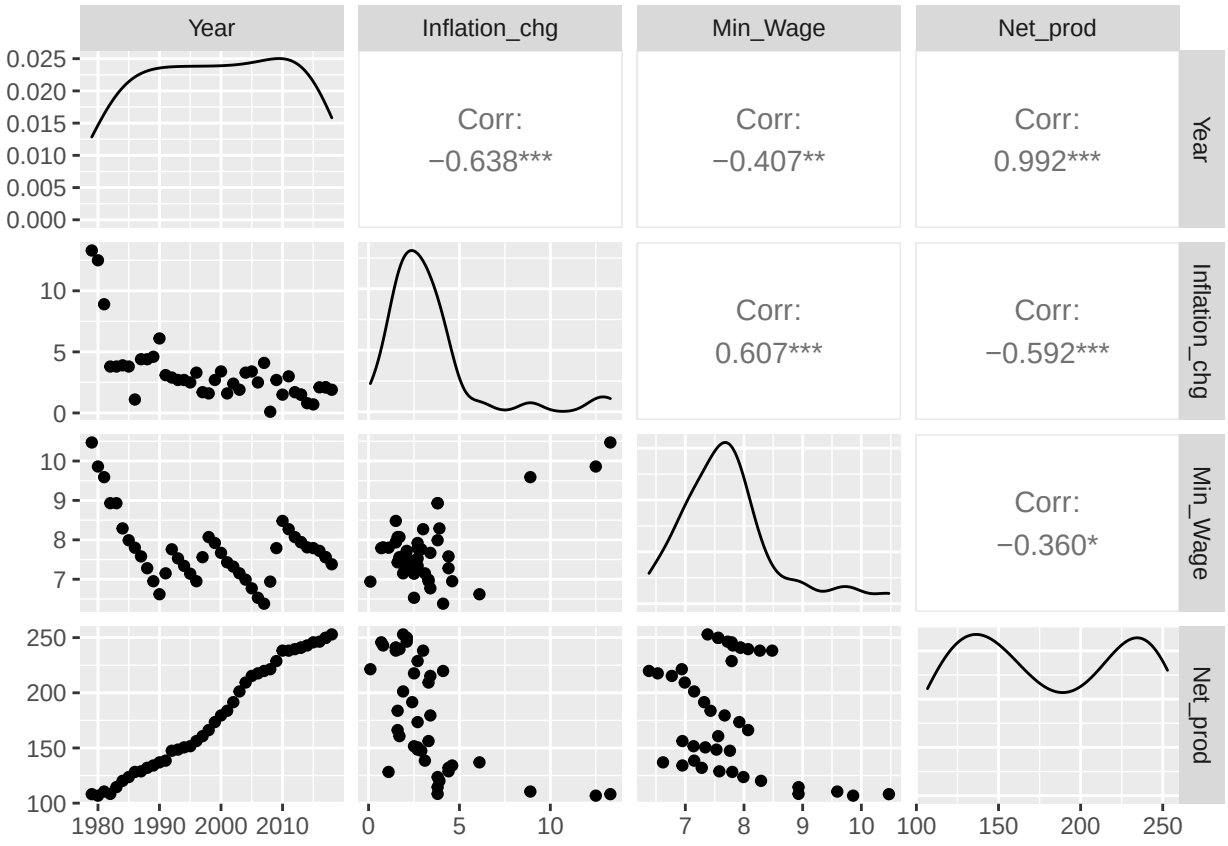

Distribution of Top 1 percent earners
count
10.0
7.5
5.0
2.5
0.0
0
50
100
150
Percentage

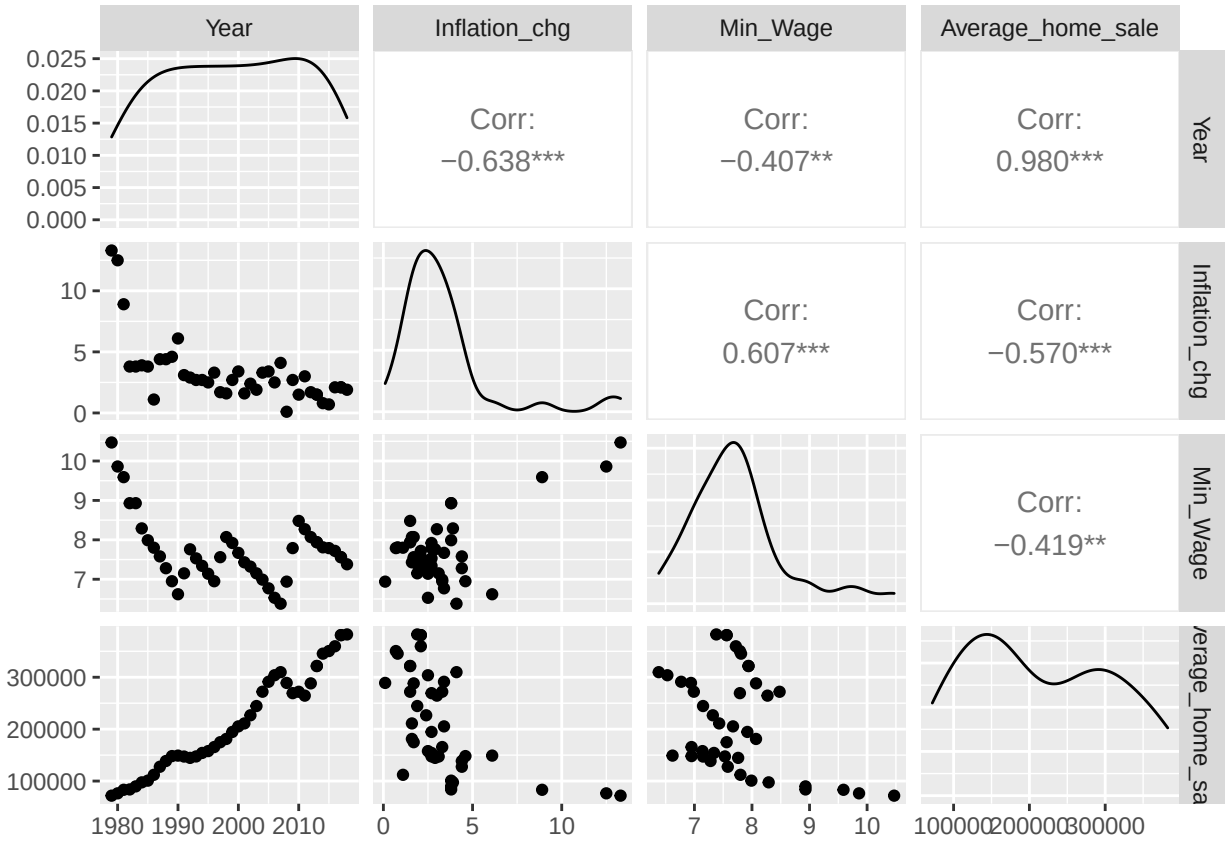

Distribution of Top tenth percent earners
count
7.5
5.0
2.5
0.0
0
100
200
300
400
Percentage

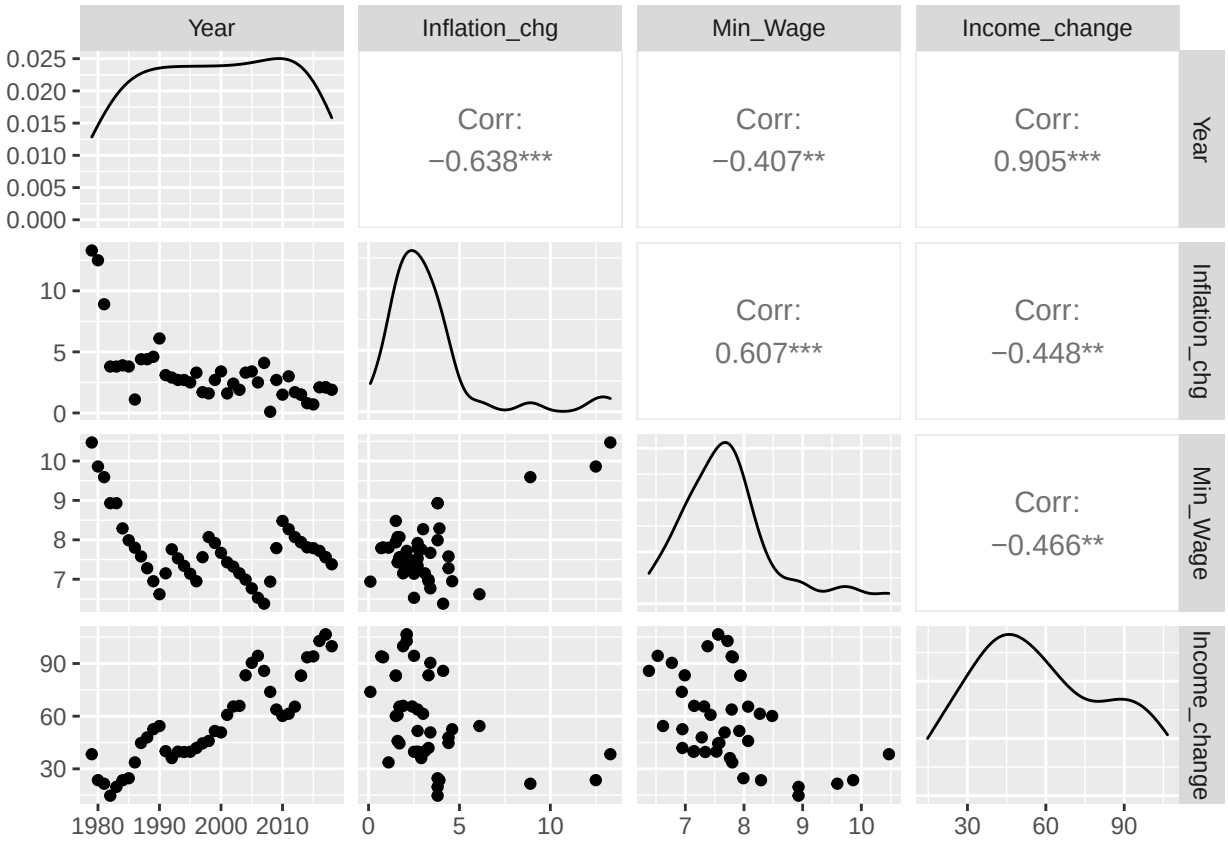

Distribution of Housing to Income Factor
count
15
10
5
0
4.0
4.5
5.0
5.5
6.0
Percentage

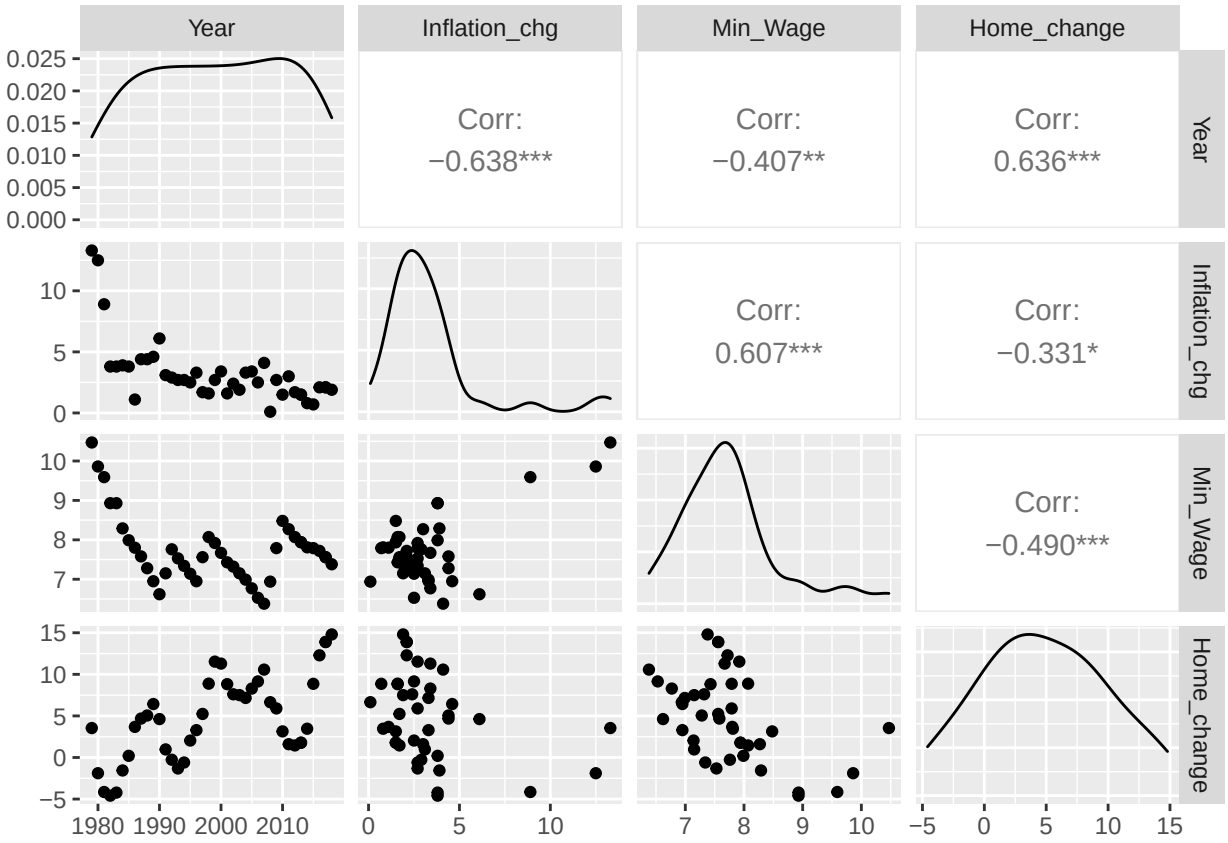

Distribution of Top tenth percent earners
count
0
2
4
6
8
10000
20000
30000
40000
50000
Percentage

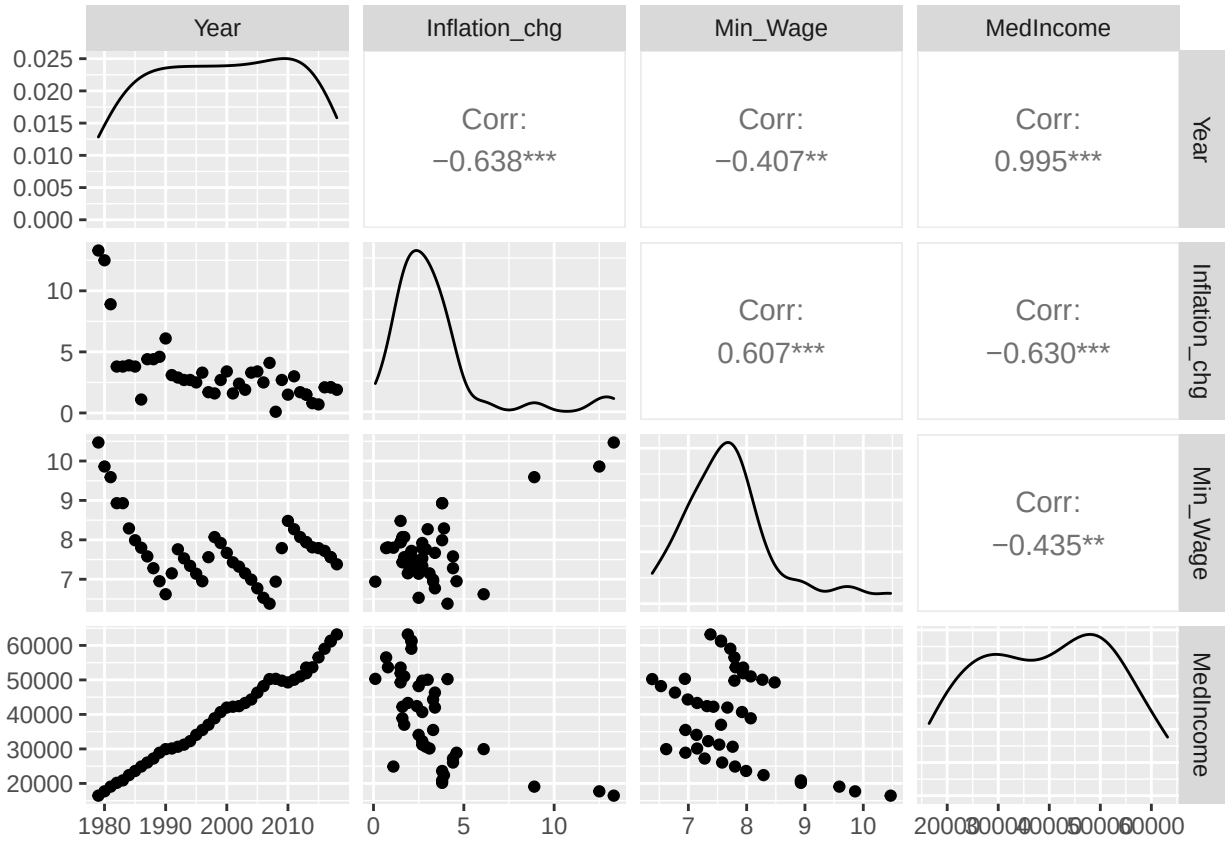

Year
Inflation_chg
Min_Wage
Hr_comp
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.881***
Corr:
0.607***
Corr:
−0.369*
Corr:
−0.039
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
110
100
90
1980 1990 2000 2010
0
5
10
7
8
9
10
90
100
110

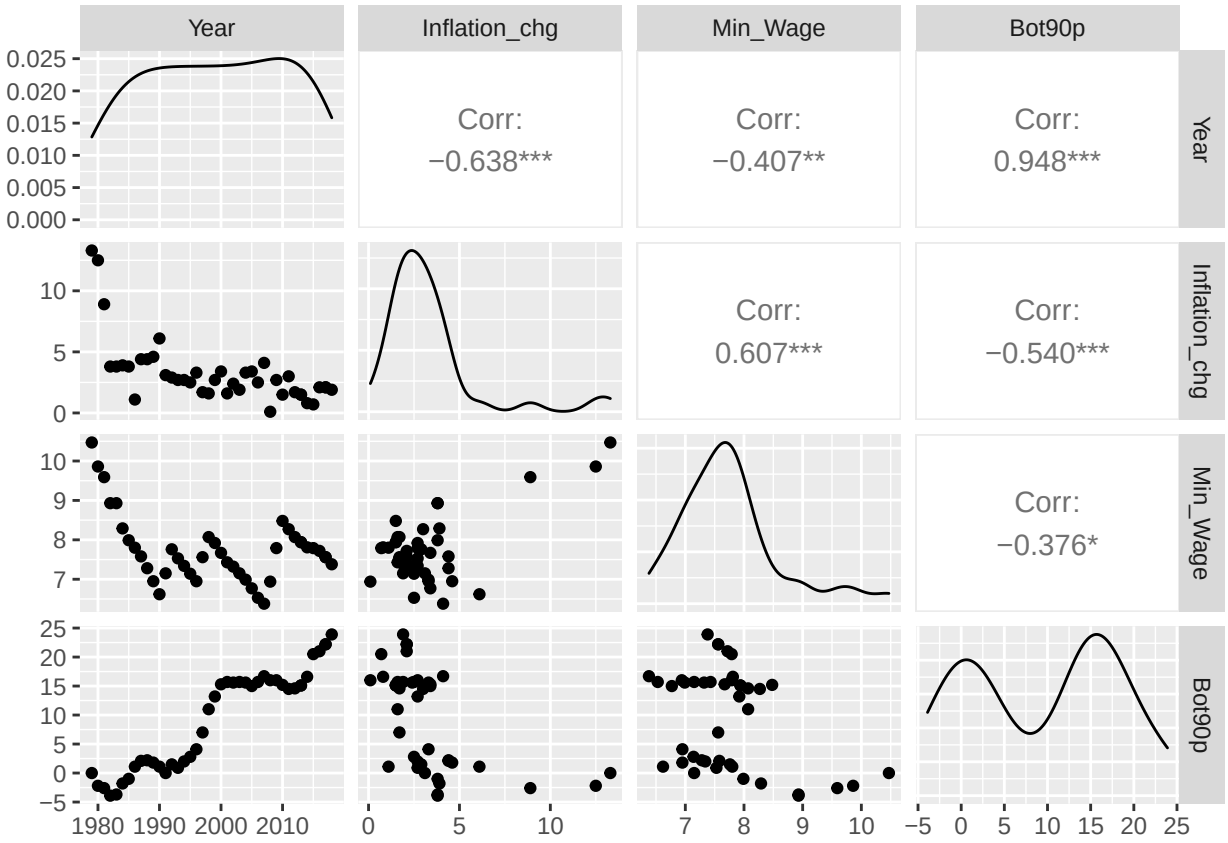

Year
Inflation_chg
Min_Wage
Net_prod
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.992***
Corr:
0.607***
Corr:
−0.592***
Corr:
−0.360*
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
250
200
150
100
1980 1990 2000 2010
0 5 10
7 8 9 10
100 150 200 250

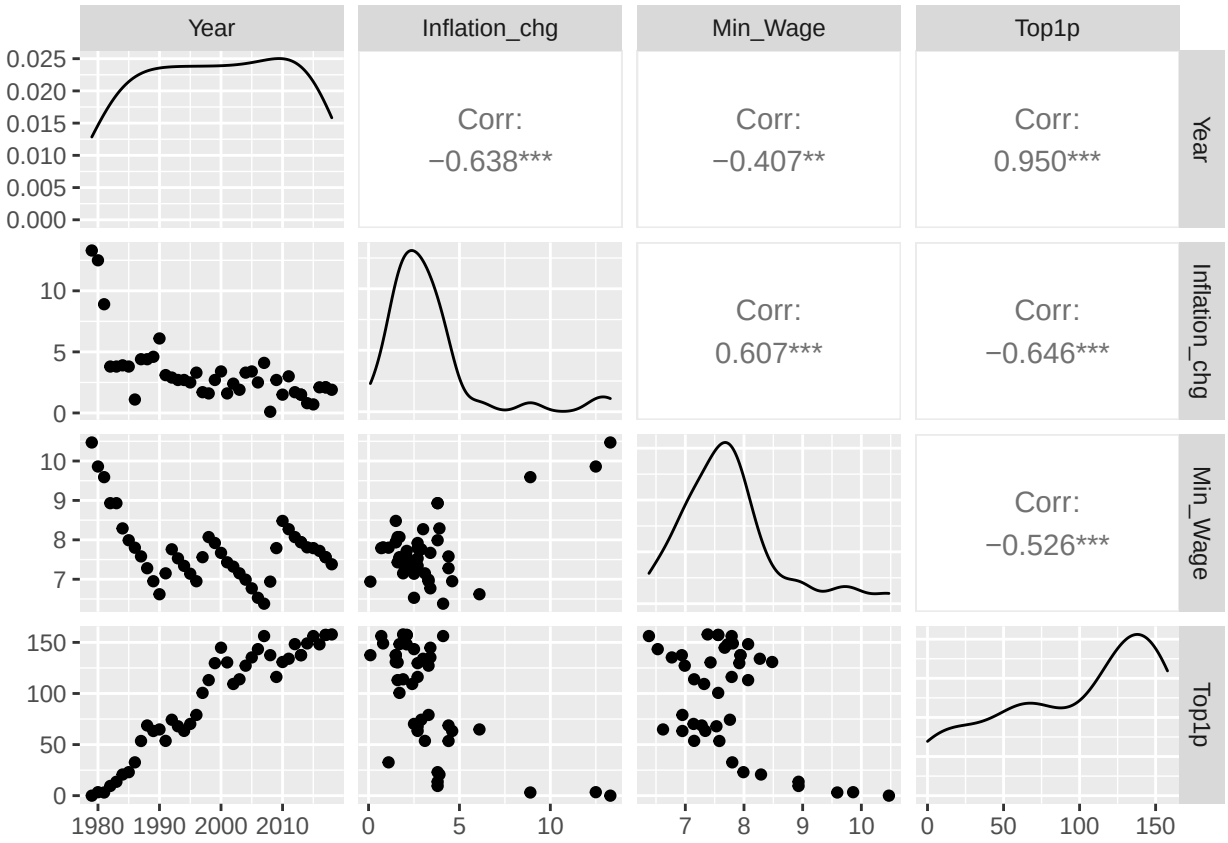

Year
Inflation_chg
Min_Wage
Average_home_sale
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.980***
Corr:
0.607***
Corr:
−0.570***
Corr:
−0.419**
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
300000
200000
100000
1980 1990 2000 2010
0
5
10
7
8
9
10
100000
200000
300000

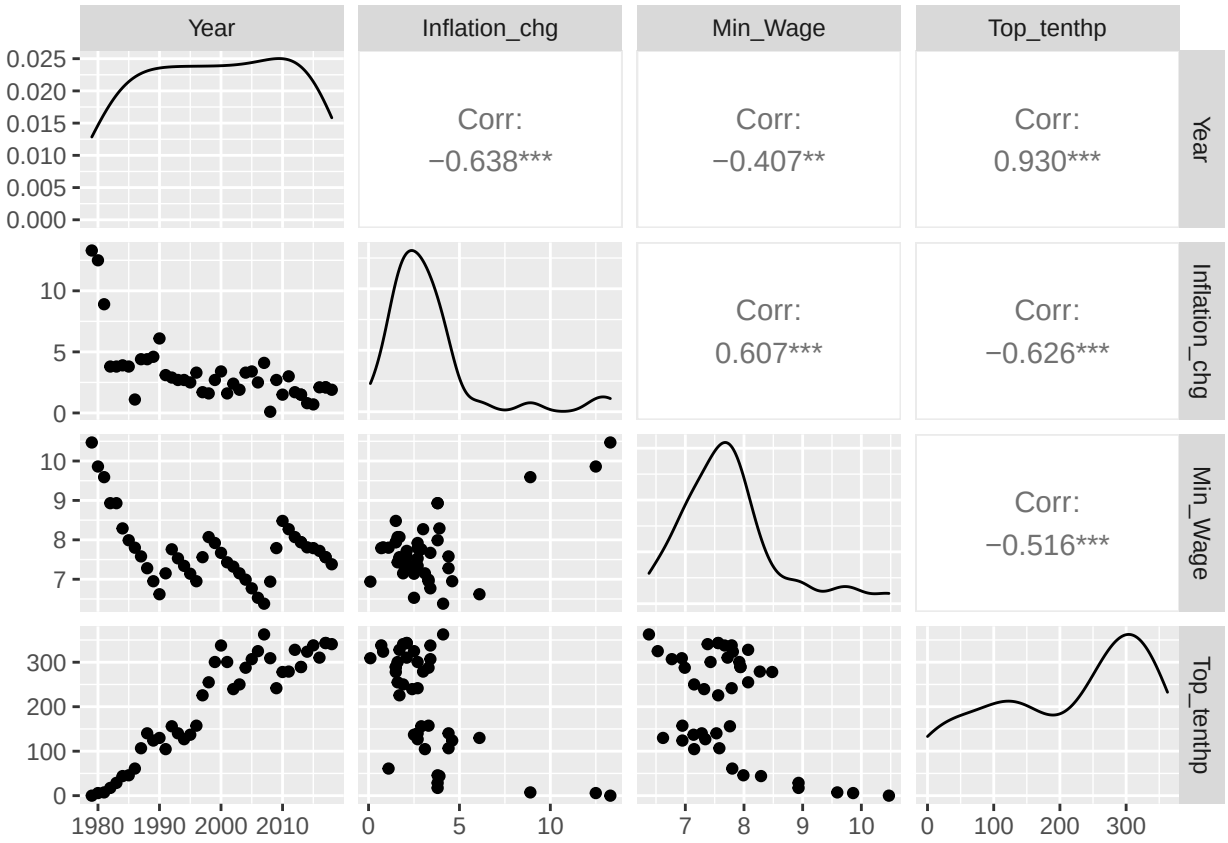

Year
Inflation_chg
Min_Wage
Income_change
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.905***
Corr:
0.607***
Corr:
−0.448**
Corr:
−0.466**
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
90
60
30
1980 1990 2000 2010
0
5
10
7
8
9
10
30
60
90


Year
Inflation_chg
Min_Wage
Home_change
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.636***
Corr:
0.607***
Corr:
−0.331*
Corr:
−0.490***
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
15
10
5
0
−5
1980 1990 2000 2010
0
5
10
7
8
9
10
−5
0
5
10
15


Year
Inflation_chg
Min_Wage
MedIncome
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.995***
Corr:
0.607***
Corr:
−0.630***
Corr:
−0.435**
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
60000
50000
40000
30000
20000
1980 1990 2000 2010
0
5
10
7
8
9
10
20000 30000 40000 50000 60000


Year
Inflation_chg
Min_Wage
Bot90p
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.948***
Corr:
0.607***
Corr:
−0.540***
Corr:
−0.376*
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
25
20
15
10
5
0
−5
1980 1990 2000 2010
0 5 10
7 8 9 10
−5 0 5 10 15 20 25


Year
Inflation_chg
Min_Wage
Top1p
Corr:
−0.638***
Corr:
−0.407**
Corr:
0.950***
Corr:
0.607***
Corr:
−0.646***
Corr:
−0.526***
0.025
0.020
0.015
0.010
0.005
0.000
10
5
0
10
9
8
7
150
100
50
0
1980 1990 2000 2010
0
5
10
7
8
9
10
0
50
100
150



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