A look into Homelessness Data in America (Final Project Step2)

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Importing and Cleasing of Data

The different datasets gathered for Homeless data analysis were downloaded in excel (xlxs) and csv format. The following steps were applied to the data sources:

2021 AHAR: Part 1 - PIT Estimates of Homelessness in the U.S. 2007-2021-PIT-Counts-by-State

- The structure of the spreadsheet have Point In Time homeless information for each year separated in every excel sheet
- I have created a loop that will read through each Sheet (years) that I'm interested (2017-2022). Each Iteration will append to the new dataframe for PIT Homeless information
- Part of the loop is identifying the year where I created a constant variable of 'year'. The value is assigned is based from the excel sheet where the data is extracted from.

```
## Set the working directory to the root of your DSC 520 directory
setwd("C:/Users/janin/OneDrive/Documents/R_repo/dsc520/")

## Load the `PIT by State 2015-2022

# Using For loop, read sheet for year I wanted to extract.
pit_year <- c("2020","2019","2018","2017")

pit_homeless_df <- data.frame()
for (year in pit_year)
{
    # df_name <- paste("pit",year,"_df", sep = "")
    temp<- read_excel("data/homelessdata/2007-2021-PIT-Counts-by-State.xlsx", sheet =year )
    temp["year"] <- year
    #assign(x=df_name, value=temp) #data frame created for every PIT year
    #rm(temp)
    pit_homeless_df <- rbind(pit_homeless_df,temp)
    rm(temp) #Clean-up
}

head (pit_homeless_df)
```

```
## # A tibble: 6 x 542
##   State Number_of_CoCs Total_PIT_Homeless Total_Under_18 Total_Age_18_to_24
##   <chr>          <dbl>              <dbl>          <dbl>              <dbl>
## 1 AK                 2               1949            326                197
```

```
## 2 AL              8         3351        528              198
## 3 AR              4         2366        195              258
## 4 AS              0           NA         NA               NA
## 5 AZ              3        10979       1722              824
## 6 CA             44       161548      16141            13391
## # ... with 537 more variables: Total_Over_24 <dbl>, Total_Female <dbl>,
## #   Total_Male <dbl>, Total_Transgender <dbl>, Total_GenderNonConform <dbl>,
## #   Total_NonHisp <dbl>, Total_Hisp <dbl>, Total_White <dbl>,
## #   Total_AfricanAmerican <dbl>, Total_Asian <dbl>, Total_AmericanIndian <dbl>,
## #   Total_Hawaiian <dbl>, Total_Multiple_Races <dbl>, S_ES_ <dbl>,
## #   S_ES_Under_18 <dbl>, S_ES_Age_18_to_24 <dbl>, S_ES_Over_24 <dbl>,
## #   S_ES_Female <dbl>, S_ES_Male <dbl>, S_ES_Transgender <dbl>, ...
```

The accompanying Housing Inventory Count (HIC) data 2007-2021-HIC-Counts-by-State

- Similar with the PIT information. The structure of the spreadsheet have HIC data information for each year separated in every sheet
- I have created a loop that will read through each Sheet (years) that I'm interested (2017-2022). Each Iteration will append to the new dataframe for HIC Homeless information
- Part of the loop is identifying the year where I created a constant variable of 'year'. The value is assigned is based from the excel sheet where the data is extracted from.

```
## Set the working directory to the root of your DSC 520 directory
setwd("C:/Users/janin/OneDrive/Documents/R_repo/dsc520/")

hic_year <- c("2020","2019","2018","2017")
hic_homeless_df <- data.frame()

for (year in hic_year)
{
  temp<- read_excel("data/homelessdata/2007-2021-HIC-Counts-by-State.xlsx", sheet =year,skip=1 )
  temp["year"] <- year
  hic_homeless_df <- rbind(hic_homeless_df,temp)
  rm(temp) #Clean-up
}

head (hic_homeless_df)
```

```
## # A tibble: 6 x 78
##    State TOTAL_YEAR_BED 'Total Non-DV Year-Ro~' 'Total HMIS Ye~' 'HMIS Particip~'
##    <chr>          <dbl>                   <dbl>            <dbl>            <dbl>
## 1 AK              1885                    1347             1122            0.595
## 2 AL              2913                    2291             1659            0.570
## 3 AR              1686                    1193              680            0.403
## 4 AZ              6079                    4943             4352            0.716
## 5 CA             53265                   48649            35666            0.670
## 6 CO              8274                    7693             4460            0.539
## # ... with 73 more variables: TOTAL_YEAR_BED_ES <dbl>, TOTAL_YEAR_BED_TH <dbl>,
## #   TOTAL_YEAR_BED_SH <dbl>,
## #   'Total Units for Households with Children (ES, TH, SH)' <dbl>,
## #   'Total Beds for Households with Children (ES, TH, SH)' <dbl>,
## #   'Total Beds for Households without Children (ES, TH, SH)' <dbl>,
## #   'Total Beds for Households with only Children (ES, TH, SH)' <dbl>,
## #   'Dedicated Veteran Beds (ES, TH, SH)' <dbl>, ...
```

** Merging HUD Exchange Data Because of Similarity of data structure where data is by State and year. I have merged the information to have one raw HUD dataset (homeless_df) with data elements from:

1. **2021 AHAR: Part 1 - PIT Estimates of Homelessness in the U.S.** 2007-2021-PIT-Counts-by-State

2. **The accompanying Housing Inventory Count (HIC) data** 2007-2021-HIC-Counts-by-State

This raw data includes PIT and HIC information from HUD exchange for a State and Year (The scope is 2017-2020 for this research)

```
homeless_df <- merge(pit_homeless_df, hic_homeless_df , by=c("year", "State"))

homeless_df %>% select(State,year,Number_of_CoCs,Total_PIT_Homeless, Total_Age_18_to_24, Total_Under_18
               Total_Transgender,Total_GenderNonConform,Total_NonHisp,Total_White,Total_Asian,
               ,Total_AmericanIndian,S_ES_Multiple_Races,TOTAL_YEAR_BED, TOTAL_YEAR_BED_ES, TOT

head (homeless_df)
```

```
##   State year Number_of_CoCs Total_PIT_Homeless Total_Age_18_to_24
## 1    AK 2017              2               1845                186
## 2    AL 2017              8               3793                300
## 3    AR 2017              6               2467                209
## 4    AZ 2017              3               8947                660
## 5    CA 2017             43             131532              13276
## 6    CO 2017              3              10940                913
##   Total_Under_18 Total_Over_24 Total_Female Total_Male Total_Transgender
## 1            305          1354          765       1075                 4
## 2            528          2965         1314       2453                21
## 3            265          1993          965       1499                 3
## 4           1607          6680         3331       5592                22
## 5          14207        104049        42750      87609               793
## 6           2164          7863         4014       6866                37
##   Total_GenderNonConform Total_NonHisp Total_White Total_Asian Total_Hawaiian
## 1                      1          1743         641          20             69
## 2                      5          3721        1587           9              1
## 3                      0          2405        1447           9              7
## 4                      2          6876        6086          51             46
## 5                    380         90040       68784        2490           1459
## 6                     23          8142        7778          51             45
##   Total_AfricanAmerican Total_AmericanIndian S_ES_Multiple_Races TOTAL_YEAR_BED
## 1                   147                  770                  94           1828
## 2                  2064                   21                  56           3444
## 3                   892                   24                  40           2062
## 4                  1611                  704                 166           5880
## 5                 42282                 5663                2135          44473
## 6                  1788                  546                 279           7071
##   TOTAL_YEAR_BED_ES TOTAL_YEAR_BED_TH TOTAL_YEAR_BED_SH
## 1              1130               698                 0
## 2              2073              1334                37
## 3              1513               549                 0
## 4              3866              1978                36
## 5             24799             19537               137
## 6              3761              3285                25
```

USA FACTS https://usafacts.org/ This website includes public statistic information collectedby multiple agencies including US Census and for this analysis, I have gathered the following for the year 2017 -2020 (when available):

1. US Population by State
2. Employment by State
3. Poverty by State
4. Percent of Adult with Depression by State
5. Violence and Crime Rate by State

- I have created a loop that will read through each csv file and will capture the yearly information in column
- Part of the loop is identifying the year where I created a constant variable of 'year'. The value is assigned is based from the "COLUMN" where the data is is extracted from.
- While going to each file, the process append to a dataframe usfacts_df to merge all information coming from USFACTS source

```
# Data from USFACTS

# Read US Population
## Set the working directory to the root of your DSC 520 directory
setwd("C:/Users/janin/OneDrive/Documents/R_repo/dsc520/")

us_pop_df<- read.csv("data/homelessdata/USPOPULATION.csv")
colnames(us_pop_df)
```

```
##   [1] "State.Name" "State"      "X1900"      "X1901"      "X1902"
##   [6] "X1903"      "X1904"      "X1905"      "X1906"      "X1907"
##  [11] "X1908"      "X1909"      "X1910"      "X1911"      "X1912"
##  [16] "X1913"      "X1914"      "X1915"      "X1916"      "X1917"
##  [21] "X1918"      "X1919"      "X1920"      "X1921"      "X1922"
##  [26] "X1923"      "X1924"      "X1925"      "X1926"      "X1927"
##  [31] "X1928"      "X1929"      "X1930"      "X1931"      "X1932"
##  [36] "X1933"      "X1934"      "X1935"      "X1936"      "X1937"
##  [41] "X1938"      "X1939"      "X1940"      "X1941"      "X1942"
##  [46] "X1943"      "X1944"      "X1945"      "X1946"      "X1947"
##  [51] "X1948"      "X1949"      "X1950"      "X1951"      "X1952"
##  [56] "X1953"      "X1954"      "X1955"      "X1956"      "X1957"
##  [61] "X1958"      "X1959"      "X1960"      "X1961"      "X1962"
##  [66] "X1963"      "X1964"      "X1965"      "X1966"      "X1967"
##  [71] "X1968"      "X1969"      "X1970"      "X1971"      "X1972"
##  [76] "X1973"      "X1974"      "X1975"      "X1976"      "X1977"
##  [81] "X1978"      "X1979"      "X1980"      "X1981"      "X1982"
##  [86] "X1983"      "X1984"      "X1985"      "X1986"      "X1987"
##  [91] "X1988"      "X1989"      "X1990"      "X1991"      "X1992"
##  [96] "X1993"      "X1994"      "X1995"      "X1996"      "X1997"
## [101] "X1998"      "X1999"      "X2000"      "X2001"      "X2002"
## [106] "X2003"      "X2004"      "X2005"      "X2006"      "X2007"
## [111] "X2008"      "X2009"      "X2010"      "X2011"      "X2012"
## [116] "X2013"      "X2014"      "X2015"      "X2016"      "X2017"
## [121] "X2018"      "X2019"      "X2020"      "X2021"
```

```r
uspop_year <- c("2020","2019","2018","2017")

us_pop_year_df <- data.frame()

for (year in uspop_year)
{
  colyear <- paste("X",year,sep = "")
  us_pop_df %>% select (State, colyear) -> temp
  temp["year"] <- year
  names(temp) <-c("State", "Population", "year")
  us_pop_year_df <- rbind(us_pop_year_df,temp)
}
```

```
## Note: Using an external vector in selections is ambiguous.
## i Use `all_of(colyear)` instead of `colyear` to silence this message.
## i See <https://tidyselect.r-lib.org/reference/faq-external-vector.html>.
## This message is displayed once per session.
```

```r
head(us_pop_year_df)
```

```
##   State Population year
## 1    AL    4921532 2020
## 2    AK     731158 2020
## 3    AZ    7421401 2020
## 4    AR    3030522 2020
## 5    CA   39368078 2020
## 6    CO    5807719 2020
```

```r
rm(us_pop_df) #Cleanup raw data

# Employment US Facts per state
us_emp_df<- read.csv("data/homelessdata/employment_usafacts.csv")

#uspop_year <- c("2020","2019","2018","2017")

us_emp_year_df <- data.frame()

for (year in uspop_year)
{
  colyear <- paste("X",year,sep = "")
  us_emp_df %>% select (State, colyear) -> temp
  temp["year"] <- year
  head(temp)
  names(temp) <-c("State", "Employment", "year")
  us_emp_year_df <- rbind(us_emp_year_df,temp)
}

tail(us_emp_year_df)
```

```
##       State Employment year
## 203    VT      315100 2017
## 204    VA     3958700 2017
```

```
## 205    WA    3321100 2017
## 206    WV     715500 2017
## 207    WI    2948200 2017
## 208    WY     283600 2017
```

```r
rm(us_emp_df) #Cleanup Raw Data


# Merge Variables USFACTS
usfacts_df <- merge(us_pop_year_df,us_emp_year_df, by =c("year", "State"))

# poverty US Facts per state
us_poverty_df<- read.csv("data/homelessdata/people_in_poverty_usafacts.csv")

us_poverty_year_df <- data.frame()

for (year in uspop_year)
{
  colyear <- paste("X",year,sep = "")
  us_poverty_df %>% select (State, colyear) -> temp
  temp["year"] <- year
  head(temp)
  names(temp) <-c("State", "Poverty", "year")
  us_poverty_year_df <- rbind(us_poverty_year_df,temp)
}

tail(us_poverty_year_df)
```

```
##      State Poverty year
## 199     VT   53000 2017
## 200     VA  862000 2017
## 201     WA  810000 2017
## 202     WV  306000 2017
## 203     WI  537000 2017
## 204     WY   73000 2017
```

```r
rm(us_poverty_df) #clean up raw data


usfacts_df <- merge(usfacts_df,us_poverty_year_df, by =c("year", "State"))


# Depression
us_meddepresspct_df<- read.csv("data/homelessdata/percent_of_adults_with_depression_usafacts.csv")

us_meddepresspct_year_df <- data.frame()

for (year in uspop_year)
{
  colyear <- paste("X",year,sep = "")
  us_meddepresspct_df %>% select (State, colyear) -> temp
  temp["year"] <- year
  head(temp)
```

```r
  names(temp) <-c("State", "DepressPCT", "year")
  us_meddepresspct_year_df <- rbind(us_meddepresspct_year_df,temp)
}

tail(us_meddepresspct_year_df)
```

```
##      State DepressPCT year
## 203    VT      0.252 2017
## 204    VA      0.190 2017
## 205    WA      0.232 2017
## 206    WV      0.260 2017
## 207    WI      0.188 2017
## 208    WY      0.213 2017
```

```r
rm (us_meddepresspct_df) #clean-up raw data

usfacts_df <- merge(usfacts_df,us_meddepresspct_year_df, by =c("year", "State"))


# Violence and Crime
us_violencecrime_df<- read.csv("data/homelessdata/violent_crimes_usafacts.csv")

colnames(us_violencecrime_df)
```

```
##  [1] "Statename" "State"     "X1979"     "X1980"     "X1981"     "X1982"
##  [7] "X1983"     "X1984"     "X1985"     "X1986"     "X1987"     "X1988"
## [13] "X1989"     "X1990"     "X1991"     "X1992"     "X1993"     "X1994"
## [19] "X1995"     "X1996"     "X1997"     "X1998"     "X1999"     "X2000"
## [25] "X2001"     "X2002"     "X2003"     "X2004"     "X2005"     "X2006"
## [31] "X2007"     "X2008"     "X2009"     "X2010"     "X2011"     "X2012"
## [37] "X2013"     "X2014"     "X2015"     "X2016"     "X2017"     "X2018"
## [43] "X2019"     "X2020"
```

```r
us_violencecrime_year_df <- data.frame()

for (year in uspop_year)
{
  colyear <- paste("X",year,sep = "")
  us_violencecrime_df %>% select (State, colyear) -> temp
  temp["year"] <- year
  head(temp)
  names(temp) <-c("State", "CrimeViolence", "year")
  us_violencecrime_year_df <- rbind(us_violencecrime_year_df,temp)
  rm(temp)
}


head(us_violencecrime_year_df)
```

```
##   State CrimeViolence year
## 1    AL         22322 2020
## 2    AK          6126 2020
```

```
## 3     AZ         35980 2020
## 4     AR         20363 2020
## 5     CA        174026 2020
## 6     CO         24570 2020
```

```r
rm(us_violencecrime_df) #Cleanup raw data

usfacts_df <- merge(usfacts_df,us_violencecrime_year_df, by =c("year", "State"))
```

**FAIR MARKET RENTS (40TH PERCENTILE RENTS) https://www.huduser.gov/portal/
datasets/fmr.html** This dataset contains Fair Market Rents (FMRs) for each state.

- I have extracted the excel spreadsheet per state and created a loop to read data for each yearly
  spreadsheet.
- I created a constant variable year and assign a value based on the file the data came from.
- While going to each file, the process append the dataset to usfacts_df to merge this information with
  the USFACTS dataframe

```r
# Mean housing
setwd("C:/Users/janin/OneDrive/Documents/R_repo/dsc520/")

pop_year <- c("2020","2019","2018","2017")

houserent_mean_year <- data.frame()

for (year in pop_year)
{
  excel_name <- paste("data/homelessdata/FY",year,"_50_County_rev.xlsx", sep = "")
  print(excel_name)
  temp<- read_excel(excel_name)
  temp["year"] <- year
  temp %>% select(rent50_1, rent50_2,rent50_3,rent50_4, state_alpha, year) -> temp1
  names(temp1) <-c("rent50_1", "rent50_2","rent50_3","rent50_4", "State", "year")
  houserent_mean_year <- rbind(houserent_mean_year,temp1)
  rm(temp) #Clean-up
  rm(temp1) #Clean-up
}
```

```
## [1] "data/homelessdata/FY2020_50_County_rev.xlsx"
## [1] "data/homelessdata/FY2019_50_County_rev.xlsx"
## [1] "data/homelessdata/FY2018_50_County_rev.xlsx"
## [1] "data/homelessdata/FY2017_50_County_rev.xlsx"
```

```r
head(houserent_mean_year)
```

```
## # A tibble: 6 x 6
##   rent50_1 rent50_2 rent50_3 rent50_4 State year
##      <dbl>    <dbl>    <dbl>    <dbl> <chr> <chr>
## 1      699      920     1209     1560 TX    2020
## 2      699      920     1209     1560 TX    2020
## 3      699      920     1209     1560 TX    2020
## 4      397      452      591      713 PR    2020
## 5      397      452      591      713 PR    2020
## 6      397      452      591      713 PR    2020
```

```r
usfacts_df <- merge(usfacts_df,houserent_mean_year, by =c("year", "State"))
```

NOAA National Climatic Data Center of the United States This dataset contains current average temperature per state. This process reads the dataset and append to usfacts_df to merge this information with the USFACTS dataframe

```r
# Extracted
setwd("C:/Users/janin/OneDrive/Documents/R_repo/dsc520/")

state_ave_weather_df <- read_excel("data/homelessdata/average_weather_state.xlsx")

head(state_ave_weather_df)
```

```
## # A tibble: 6 x 5
##   Statename  State ave_f ave_c weather_rank
##   <chr>      <chr> <dbl> <dbl>        <dbl>
## 1 Alabama    AL     62.8  17.1            7
## 2 Alaska     AK     26.6  -3             50
## 3 Arizona    AZ     60.3  15.7           10
## 4 Arkansas   AR     60.4  15.8            9
## 5 California CA     59.4  15.2           12
## 6 Colorado   CO     45.1   7.3           39
```

```r
usfacts_df <- merge(usfacts_df,state_ave_weather_df, by =c("State"))
```

*** To create the Final data, I have merged the homeless_df with the HUD Exchange Information specific on homelessness and usafacts_df with state information that I believe can factor homelessness. Data is breakdown per State and Year.

- This information can be sliced to use Top state with homelessness or look at it in General population (all state)
- We can look at a specific year information within the period of 2017 - 2020
- I would like to look more on the homelessness demographic information but the challenge is that information is not available in public or may require permission to obtain which make sense because of the confidentiality of personal identifiable information. This limit this analysis and will not include identifying Person Risk factors to homelessness or being chronic homeless.

```r
us_homeless_df <- merge(homeless_df,usfacts_df, by =c("year", "State"))

head(us_homeless_df, n=100)
```

```
##     year State Number_of_CoCs Total_PIT_Homeless Total_Age_18_to_24
## 1   2017    AK              2               1845                186
## 2   2017    AK              2               1845                186
## 3   2017    AK              2               1845                186
## 4   2017    AK              2               1845                186
## 5   2017    AK              2               1845                186
## 6   2017    AK              2               1845                186
## 7   2017    AK              2               1845                186
## 8   2017    AK              2               1845                186
## 9   2017    AK              2               1845                186
```

```
## 10   2017    AK              2               1845            186
## 11   2017    AK              2               1845            186
## 12   2017    AK              2               1845            186
## 13   2017    AK              2               1845            186
## 14   2017    AK              2               1845            186
## 15   2017    AK              2               1845            186
## 16   2017    AK              2               1845            186
## 17   2017    AK              2               1845            186
## 18   2017    AK              2               1845            186
## 19   2017    AK              2               1845            186
## 20   2017    AK              2               1845            186
## 21   2017    AK              2               1845            186
## 22   2017    AK              2               1845            186
## 23   2017    AK              2               1845            186
## 24   2017    AK              2               1845            186
## 25   2017    AK              2               1845            186
## 26   2017    AK              2               1845            186
## 27   2017    AK              2               1845            186
## 28   2017    AK              2               1845            186
## 29   2017    AK              2               1845            186
## 30   2017    AL              8               3793            300
## 31   2017    AL              8               3793            300
## 32   2017    AL              8               3793            300
## 33   2017    AL              8               3793            300
## 34   2017    AL              8               3793            300
## 35   2017    AL              8               3793            300
## 36   2017    AL              8               3793            300
## 37   2017    AL              8               3793            300
## 38   2017    AL              8               3793            300
## 39   2017    AL              8               3793            300
## 40   2017    AL              8               3793            300
## 41   2017    AL              8               3793            300
## 42   2017    AL              8               3793            300
## 43   2017    AL              8               3793            300
## 44   2017    AL              8               3793            300
## 45   2017    AL              8               3793            300
## 46   2017    AL              8               3793            300
## 47   2017    AL              8               3793            300
## 48   2017    AL              8               3793            300
## 49   2017    AL              8               3793            300
## 50   2017    AL              8               3793            300
## 51   2017    AL              8               3793            300
## 52   2017    AL              8               3793            300
## 53   2017    AL              8               3793            300
## 54   2017    AL              8               3793            300
## 55   2017    AL              8               3793            300
## 56   2017    AL              8               3793            300
## 57   2017    AL              8               3793            300
## 58   2017    AL              8               3793            300
## 59   2017    AL              8               3793            300
## 60   2017    AL              8               3793            300
## 61   2017    AL              8               3793            300
## 62   2017    AL              8               3793            300
## 63   2017    AL              8               3793            300
```

```
## 64  2017   AL            8                   3793                   300
## 65  2017   AL            8                   3793                   300
## 66  2017   AL            8                   3793                   300
## 67  2017   AL            8                   3793                   300
## 68  2017   AL            8                   3793                   300
## 69  2017   AL            8                   3793                   300
## 70  2017   AL            8                   3793                   300
## 71  2017   AL            8                   3793                   300
## 72  2017   AL            8                   3793                   300
## 73  2017   AL            8                   3793                   300
## 74  2017   AL            8                   3793                   300
## 75  2017   AL            8                   3793                   300
## 76  2017   AL            8                   3793                   300
## 77  2017   AL            8                   3793                   300
## 78  2017   AL            8                   3793                   300
## 79  2017   AL            8                   3793                   300
## 80  2017   AL            8                   3793                   300
## 81  2017   AL            8                   3793                   300
## 82  2017   AL            8                   3793                   300
## 83  2017   AL            8                   3793                   300
## 84  2017   AL            8                   3793                   300
## 85  2017   AL            8                   3793                   300
## 86  2017   AL            8                   3793                   300
## 87  2017   AL            8                   3793                   300
## 88  2017   AL            8                   3793                   300
## 89  2017   AL            8                   3793                   300
## 90  2017   AL            8                   3793                   300
## 91  2017   AL            8                   3793                   300
## 92  2017   AL            8                   3793                   300
## 93  2017   AL            8                   3793                   300
## 94  2017   AL            8                   3793                   300
## 95  2017   AL            8                   3793                   300
## 96  2017   AL            8                   3793                   300
## 97  2017   AR            6                   2467                   209
## 98  2017   AR            6                   2467                   209
## 99  2017   AR            6                   2467                   209
## 100 2017   AR            6                   2467                   209
##      Total_Under_18 Total_Over_24 Total_Female Total_Male Total_Transgender
## 1               305          1354          765       1075                 4
## 2               305          1354          765       1075                 4
## 3               305          1354          765       1075                 4
## 4               305          1354          765       1075                 4
## 5               305          1354          765       1075                 4
## 6               305          1354          765       1075                 4
## 7               305          1354          765       1075                 4
## 8               305          1354          765       1075                 4
## 9               305          1354          765       1075                 4
## 10              305          1354          765       1075                 4
## 11              305          1354          765       1075                 4
## 12              305          1354          765       1075                 4
## 13              305          1354          765       1075                 4
## 14              305          1354          765       1075                 4
## 15              305          1354          765       1075                 4
## 16              305          1354          765       1075                 4
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## 17             305          1354          765           1075                 4
## 18             305          1354          765           1075                 4
## 19             305          1354          765           1075                 4
## 20             305          1354          765           1075                 4
## 21             305          1354          765           1075                 4
## 22             305          1354          765           1075                 4
## 23             305          1354          765           1075                 4
## 24             305          1354          765           1075                 4
## 25             305          1354          765           1075                 4
## 26             305          1354          765           1075                 4
## 27             305          1354          765           1075                 4
## 28             305          1354          765           1075                 4
## 29             305          1354          765           1075                 4
## 30             528          2965          1314          2453                21
## 31             528          2965          1314          2453                21
## 32             528          2965          1314          2453                21
## 33             528          2965          1314          2453                21
## 34             528          2965          1314          2453                21
## 35             528          2965          1314          2453                21
## 36             528          2965          1314          2453                21
## 37             528          2965          1314          2453                21
## 38             528          2965          1314          2453                21
## 39             528          2965          1314          2453                21
## 40             528          2965          1314          2453                21
## 41             528          2965          1314          2453                21
## 42             528          2965          1314          2453                21
## 43             528          2965          1314          2453                21
## 44             528          2965          1314          2453                21
## 45             528          2965          1314          2453                21
## 46             528          2965          1314          2453                21
## 47             528          2965          1314          2453                21
## 48             528          2965          1314          2453                21
## 49             528          2965          1314          2453                21
## 50             528          2965          1314          2453                21
## 51             528          2965          1314          2453                21
## 52             528          2965          1314          2453                21
## 53             528          2965          1314          2453                21
## 54             528          2965          1314          2453                21
## 55             528          2965          1314          2453                21
## 56             528          2965          1314          2453                21
## 57             528          2965          1314          2453                21
## 58             528          2965          1314          2453                21
## 59             528          2965          1314          2453                21
## 60             528          2965          1314          2453                21
## 61             528          2965          1314          2453                21
## 62             528          2965          1314          2453                21
## 63             528          2965          1314          2453                21
## 64             528          2965          1314          2453                21
## 65             528          2965          1314          2453                21
## 66             528          2965          1314          2453                21
## 67             528          2965          1314          2453                21
## 68             528          2965          1314          2453                21
## 69             528          2965          1314          2453                21
## 70             528          2965          1314          2453                21
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## 71                528          2965         1314         2453                     21
## 72                528          2965         1314         2453                     21
## 73                528          2965         1314         2453                     21
## 74                528          2965         1314         2453                     21
## 75                528          2965         1314         2453                     21
## 76                528          2965         1314         2453                     21
## 77                528          2965         1314         2453                     21
## 78                528          2965         1314         2453                     21
## 79                528          2965         1314         2453                     21
## 80                528          2965         1314         2453                     21
## 81                528          2965         1314         2453                     21
## 82                528          2965         1314         2453                     21
## 83                528          2965         1314         2453                     21
## 84                528          2965         1314         2453                     21
## 85                528          2965         1314         2453                     21
## 86                528          2965         1314         2453                     21
## 87                528          2965         1314         2453                     21
## 88                528          2965         1314         2453                     21
## 89                528          2965         1314         2453                     21
## 90                528          2965         1314         2453                     21
## 91                528          2965         1314         2453                     21
## 92                528          2965         1314         2453                     21
## 93                528          2965         1314         2453                     21
## 94                528          2965         1314         2453                     21
## 95                528          2965         1314         2453                     21
## 96                528          2965         1314         2453                     21
## 97                265          1993          965         1499                      3
## 98                265          1993          965         1499                      3
## 99                265          1993          965         1499                      3
## 100               265          1993          965         1499                      3
##      Total_GenderNonConform Total_NonHisp Total_White Total_Asian Total_Hawaiian
## 1                         1          1743         641          20             69
## 2                         1          1743         641          20             69
## 3                         1          1743         641          20             69
## 4                         1          1743         641          20             69
## 5                         1          1743         641          20             69
## 6                         1          1743         641          20             69
## 7                         1          1743         641          20             69
## 8                         1          1743         641          20             69
## 9                         1          1743         641          20             69
## 10                        1          1743         641          20             69
## 11                        1          1743         641          20             69
## 12                        1          1743         641          20             69
## 13                        1          1743         641          20             69
## 14                        1          1743         641          20             69
## 15                        1          1743         641          20             69
## 16                        1          1743         641          20             69
## 17                        1          1743         641          20             69
## 18                        1          1743         641          20             69
## 19                        1          1743         641          20             69
## 20                        1          1743         641          20             69
## 21                        1          1743         641          20             69
## 22                        1          1743         641          20             69
## 23                        1          1743         641          20             69
```

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## 24                    1        1743       641        20         69
## 25                    1        1743       641        20         69
## 26                    1        1743       641        20         69
## 27                    1        1743       641        20         69
## 28                    1        1743       641        20         69
## 29                    1        1743       641        20         69
## 30                    5        3721      1587         9          1
## 31                    5        3721      1587         9          1
## 32                    5        3721      1587         9          1
## 33                    5        3721      1587         9          1
## 34                    5        3721      1587         9          1
## 35                    5        3721      1587         9          1
## 36                    5        3721      1587         9          1
## 37                    5        3721      1587         9          1
## 38                    5        3721      1587         9          1
## 39                    5        3721      1587         9          1
## 40                    5        3721      1587         9          1
## 41                    5        3721      1587         9          1
## 42                    5        3721      1587         9          1
## 43                    5        3721      1587         9          1
## 44                    5        3721      1587         9          1
## 45                    5        3721      1587         9          1
## 46                    5        3721      1587         9          1
## 47                    5        3721      1587         9          1
## 48                    5        3721      1587         9          1
## 49                    5        3721      1587         9          1
## 50                    5        3721      1587         9          1
## 51                    5        3721      1587         9          1
## 52                    5        3721      1587         9          1
## 53                    5        3721      1587         9          1
## 54                    5        3721      1587         9          1
## 55                    5        3721      1587         9          1
## 56                    5        3721      1587         9          1
## 57                    5        3721      1587         9          1
## 58                    5        3721      1587         9          1
## 59                    5        3721      1587         9          1
## 60                    5        3721      1587         9          1
## 61                    5        3721      1587         9          1
## 62                    5        3721      1587         9          1
## 63                    5        3721      1587         9          1
## 64                    5        3721      1587         9          1
## 65                    5        3721      1587         9          1
## 66                    5        3721      1587         9          1
## 67                    5        3721      1587         9          1
## 68                    5        3721      1587         9          1
## 69                    5        3721      1587         9          1
## 70                    5        3721      1587         9          1
## 71                    5        3721      1587         9          1
## 72                    5        3721      1587         9          1
## 73                    5        3721      1587         9          1
## 74                    5        3721      1587         9          1
## 75                    5        3721      1587         9          1
## 76                    5        3721      1587         9          1
## 77                    5        3721      1587         9          1
```

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## 78                     5            3721          1587             9               1
## 79                     5            3721          1587             9               1
## 80                     5            3721          1587             9               1
## 81                     5            3721          1587             9               1
## 82                     5            3721          1587             9               1
## 83                     5            3721          1587             9               1
## 84                     5            3721          1587             9               1
## 85                     5            3721          1587             9               1
## 86                     5            3721          1587             9               1
## 87                     5            3721          1587             9               1
## 88                     5            3721          1587             9               1
## 89                     5            3721          1587             9               1
## 90                     5            3721          1587             9               1
## 91                     5            3721          1587             9               1
## 92                     5            3721          1587             9               1
## 93                     5            3721          1587             9               1
## 94                     5            3721          1587             9               1
## 95                     5            3721          1587             9               1
## 96                     5            3721          1587             9               1
## 97                     0            2405          1447             9               7
## 98                     0            2405          1447             9               7
## 99                     0            2405          1447             9               7
## 100                    0            2405          1447             9               7
##      Total_AfricanAmerican Total_AmericanIndian S_ES_Multiple_Races
## 1                      147                  770                  94
## 2                      147                  770                  94
## 3                      147                  770                  94
## 4                      147                  770                  94
## 5                      147                  770                  94
## 6                      147                  770                  94
## 7                      147                  770                  94
## 8                      147                  770                  94
## 9                      147                  770                  94
## 10                     147                  770                  94
## 11                     147                  770                  94
## 12                     147                  770                  94
## 13                     147                  770                  94
## 14                     147                  770                  94
## 15                     147                  770                  94
## 16                     147                  770                  94
## 17                     147                  770                  94
## 18                     147                  770                  94
## 19                     147                  770                  94
## 20                     147                  770                  94
## 21                     147                  770                  94
## 22                     147                  770                  94
## 23                     147                  770                  94
## 24                     147                  770                  94
## 25                     147                  770                  94
## 26                     147                  770                  94
## 27                     147                  770                  94
## 28                     147                  770                  94
## 29                     147                  770                  94
## 30                    2064                   21                  56
```

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## 31                    2064                    21                    56
## 32                    2064                    21                    56
## 33                    2064                    21                    56
## 34                    2064                    21                    56
## 35                    2064                    21                    56
## 36                    2064                    21                    56
## 37                    2064                    21                    56
## 38                    2064                    21                    56
## 39                    2064                    21                    56
## 40                    2064                    21                    56
## 41                    2064                    21                    56
## 42                    2064                    21                    56
## 43                    2064                    21                    56
## 44                    2064                    21                    56
## 45                    2064                    21                    56
## 46                    2064                    21                    56
## 47                    2064                    21                    56
## 48                    2064                    21                    56
## 49                    2064                    21                    56
## 50                    2064                    21                    56
## 51                    2064                    21                    56
## 52                    2064                    21                    56
## 53                    2064                    21                    56
## 54                    2064                    21                    56
## 55                    2064                    21                    56
## 56                    2064                    21                    56
## 57                    2064                    21                    56
## 58                    2064                    21                    56
## 59                    2064                    21                    56
## 60                    2064                    21                    56
## 61                    2064                    21                    56
## 62                    2064                    21                    56
## 63                    2064                    21                    56
## 64                    2064                    21                    56
## 65                    2064                    21                    56
## 66                    2064                    21                    56
## 67                    2064                    21                    56
## 68                    2064                    21                    56
## 69                    2064                    21                    56
## 70                    2064                    21                    56
## 71                    2064                    21                    56
## 72                    2064                    21                    56
## 73                    2064                    21                    56
## 74                    2064                    21                    56
## 75                    2064                    21                    56
## 76                    2064                    21                    56
## 77                    2064                    21                    56
## 78                    2064                    21                    56
## 79                    2064                    21                    56
## 80                    2064                    21                    56
## 81                    2064                    21                    56
## 82                    2064                    21                    56
## 83                    2064                    21                    56
## 84                    2064                    21                    56
```

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## 85                 2064              21              56
## 86                 2064              21              56
## 87                 2064              21              56
## 88                 2064              21              56
## 89                 2064              21              56
## 90                 2064              21              56
## 91                 2064              21              56
## 92                 2064              21              56
## 93                 2064              21              56
## 94                 2064              21              56
## 95                 2064              21              56
## 96                 2064              21              56
## 97                  892              24              40
## 98                  892              24              40
## 99                  892              24              40
## 100                 892              24              40
##      TOTAL_YEAR_BED TOTAL_YEAR_BED_ES TOTAL_YEAR_BED_TH TOTAL_YEAR_BED_SH
## 1              1828              1130               698                 0
## 2              1828              1130               698                 0
## 3              1828              1130               698                 0
## 4              1828              1130               698                 0
## 5              1828              1130               698                 0
## 6              1828              1130               698                 0
## 7              1828              1130               698                 0
## 8              1828              1130               698                 0
## 9              1828              1130               698                 0
## 10             1828              1130               698                 0
## 11             1828              1130               698                 0
## 12             1828              1130               698                 0
## 13             1828              1130               698                 0
## 14             1828              1130               698                 0
## 15             1828              1130               698                 0
## 16             1828              1130               698                 0
## 17             1828              1130               698                 0
## 18             1828              1130               698                 0
## 19             1828              1130               698                 0
## 20             1828              1130               698                 0
## 21             1828              1130               698                 0
## 22             1828              1130               698                 0
## 23             1828              1130               698                 0
## 24             1828              1130               698                 0
## 25             1828              1130               698                 0
## 26             1828              1130               698                 0
## 27             1828              1130               698                 0
## 28             1828              1130               698                 0
## 29             1828              1130               698                 0
## 30             3444              2073              1334                37
## 31             3444              2073              1334                37
## 32             3444              2073              1334                37
## 33             3444              2073              1334                37
## 34             3444              2073              1334                37
## 35             3444              2073              1334                37
## 36             3444              2073              1334                37
## 37             3444              2073              1334                37
```

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## 38           3444           2073           1334           37
## 39           3444           2073           1334           37
## 40           3444           2073           1334           37
## 41           3444           2073           1334           37
## 42           3444           2073           1334           37
## 43           3444           2073           1334           37
## 44           3444           2073           1334           37
## 45           3444           2073           1334           37
## 46           3444           2073           1334           37
## 47           3444           2073           1334           37
## 48           3444           2073           1334           37
## 49           3444           2073           1334           37
## 50           3444           2073           1334           37
## 51           3444           2073           1334           37
## 52           3444           2073           1334           37
## 53           3444           2073           1334           37
## 54           3444           2073           1334           37
## 55           3444           2073           1334           37
## 56           3444           2073           1334           37
## 57           3444           2073           1334           37
## 58           3444           2073           1334           37
## 59           3444           2073           1334           37
## 60           3444           2073           1334           37
## 61           3444           2073           1334           37
## 62           3444           2073           1334           37
## 63           3444           2073           1334           37
## 64           3444           2073           1334           37
## 65           3444           2073           1334           37
## 66           3444           2073           1334           37
## 67           3444           2073           1334           37
## 68           3444           2073           1334           37
## 69           3444           2073           1334           37
## 70           3444           2073           1334           37
## 71           3444           2073           1334           37
## 72           3444           2073           1334           37
## 73           3444           2073           1334           37
## 74           3444           2073           1334           37
## 75           3444           2073           1334           37
## 76           3444           2073           1334           37
## 77           3444           2073           1334           37
## 78           3444           2073           1334           37
## 79           3444           2073           1334           37
## 80           3444           2073           1334           37
## 81           3444           2073           1334           37
## 82           3444           2073           1334           37
## 83           3444           2073           1334           37
## 84           3444           2073           1334           37
## 85           3444           2073           1334           37
## 86           3444           2073           1334           37
## 87           3444           2073           1334           37
## 88           3444           2073           1334           37
## 89           3444           2073           1334           37
## 90           3444           2073           1334           37
## 91           3444           2073           1334           37
```

```
## 92              3444          2073          1334                    37
## 93              3444          2073          1334                    37
## 94              3444          2073          1334                    37
## 95              3444          2073          1334                    37
## 96              3444          2073          1334                    37
## 97              2062          1513           549                     0
## 98              2062          1513           549                     0
## 99              2062          1513           549                     0
## 100             2062          1513           549                     0
##       Population Employment Poverty DepressPCT CrimeViolence rent50_1 rent50_2
## 1        740983     329200   87000      0.185          6338      978     1128
## 2        740983     329200   87000      0.185          6338      792     1052
## 3        740983     329200   87000      0.185          6338      899     1037
## 4        740983     329200   87000      0.185          6338     1081     1374
## 5        740983     329200   87000      0.185          6338     1068     1398
## 6        740983     329200   87000      0.185          6338     1009     1341
## 7        740983     329200   87000      0.185          6338      922     1226
## 8        740983     329200   87000      0.185          6338      836     1068
## 9        740983     329200   87000      0.185          6338      991     1265
## 10       740983     329200   87000      0.185          6338     1395     1609
## 11       740983     329200   87000      0.185          6338     1191     1374
## 12       740983     329200   87000      0.185          6338     1153     1330
## 13       740983     329200   87000      0.185          6338      828     1100
## 14       740983     329200   87000      0.185          6338      827     1099
## 15       740983     329200   87000      0.185          6338      665      875
## 16       740983     329200   87000      0.185          6338     1182     1571
## 17       740983     329200   87000      0.185          6338      931     1195
## 18       740983     329200   87000      0.185          6338     1122     1295
## 19       740983     329200   87000      0.185          6338      891     1144
## 20       740983     329200   87000      0.185          6338     1226     1415
## 21       740983     329200   87000      0.185          6338     1349     1723
## 22       740983     329200   87000      0.185          6338      825      952
## 23       740983     329200   87000      0.185          6338      699      892
## 24       740983     329200   87000      0.185          6338     1202     1555
## 25       740983     329200   87000      0.185          6338     1372     1752
## 26       740983     329200   87000      0.185          6338     1357     1803
## 27       740983     329200   87000      0.185          6338     1144     1320
## 28       740983     329200   87000      0.185          6338      989     1315
## 29       740983     329200   87000      0.185          6338     1061     1370
## 30      4877989    2018700  735000      0.238         25469      529      672
## 31      4877989    2018700  735000      0.238         25469      536      636
## 32      4877989    2018700  735000      0.238         25469      553      710
## 33      4877989    2018700  735000      0.238         25469      480      621
## 34      4877989    2018700  735000      0.238         25469      684      831
## 35      4877989    2018700  735000      0.238         25469      665      800
## 36      4877989    2018700  735000      0.238         25469      503      669
## 37      4877989    2018700  735000      0.238         25469      631      836
## 38      4877989    2018700  735000      0.238         25469      566      709
## 39      4877989    2018700  735000      0.238         25469      475      621
## 40      4877989    2018700  735000      0.238         25469      735      886
## 41      4877989    2018700  735000      0.238         25469      908     1047
## 42      4877989    2018700  735000      0.238         25469      538      621
## 43      4877989    2018700  735000      0.238         25469      538      621
## 44      4877989    2018700  735000      0.238         25469      539      716
```

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## 45    4877989    2018700    735000    0.238    25469    560    658
## 46    4877989    2018700    735000    0.238    25469    557    689
## 47    4877989    2018700    735000    0.238    25469    529    639
## 48    4877989    2018700    735000    0.238    25469    515    621
## 49    4877989    2018700    735000    0.238    25469    812    937
## 50    4877989    2018700    735000    0.238    25469    812    937
## 51    4877989    2018700    735000    0.238    25469    467    621
## 52    4877989    2018700    735000    0.238    25469    812    937
## 53    4877989    2018700    735000    0.238    25469    545    725
## 54    4877989    2018700    735000    0.238    25469    812    937
## 55    4877989    2018700    735000    0.238    25469    702    841
## 56    4877989    2018700    735000    0.238    25469    570    658
## 57    4877989    2018700    735000    0.238    25469    467    621
## 58    4877989    2018700    735000    0.238    25469    568    714
## 59    4877989    2018700    735000    0.238    25469    501    666
## 60    4877989    2018700    735000    0.238    25469    545    665
## 61    4877989    2018700    735000    0.238    25469    538    621
## 62    4877989    2018700    735000    0.238    25469    735    886
## 63    4877989    2018700    735000    0.238    25469    545    678
## 64    4877989    2018700    735000    0.238    25469    545    678
## 65    4877989    2018700    735000    0.238    25469    494    621
## 66    4877989    2018700    735000    0.238    25469    467    621
## 67    4877989    2018700    735000    0.238    25469    735    886
## 68    4877989    2018700    735000    0.238    25469    485    644
## 69    4877989    2018700    735000    0.238    25469    684    831
## 70    4877989    2018700    735000    0.238    25469    494    621
## 71    4877989    2018700    735000    0.238    25469    553    710
## 72    4877989    2018700    735000    0.238    25469    638    797
## 73    4877989    2018700    735000    0.238    25469    528    664
## 74    4877989    2018700    735000    0.238    25469    812    937
## 75    4877989    2018700    735000    0.238    25469    506    672
## 76    4877989    2018700    735000    0.238    25469    538    621
## 77    4877989    2018700    735000    0.238    25469    510    621
## 78    4877989    2018700    735000    0.238    25469    646    859
## 79    4877989    2018700    735000    0.238    25469    665    800
## 80    4877989    2018700    735000    0.238    25469    467    621
## 81    4877989    2018700    735000    0.238    25469    570    758
## 82    4877989    2018700    735000    0.238    25469    543    722
## 83    4877989    2018700    735000    0.238    25469    474    621
## 84    4877989    2018700    735000    0.238    25469    492    654
## 85    4877989    2018700    735000    0.238    25469    538    621
## 86    4877989    2018700    735000    0.238    25469    518    689
## 87    4877989    2018700    735000    0.238    25469    563    650
## 88    4877989    2018700    735000    0.238    25469    783    954
## 89    4877989    2018700    735000    0.238    25469    564    713
## 90    4877989    2018700    735000    0.238    25469    735    886
## 91    4877989    2018700    735000    0.238    25469    600    718
## 92    4877989    2018700    735000    0.238    25469    592    778
## 93    4877989    2018700    735000    0.238    25469    547    717
## 94    4877989    2018700    735000    0.238    25469    530    705
## 95    4877989    2018700    735000    0.238    25469    594    707
## 96    4877989    2018700    735000    0.238    25469    564    713
## 97    3003855    1248700    436000    0.248    16996    486    611
## 98    3003855    1248700    436000    0.248    16996    496    659
```

```
## 99     3003855   1248700  436000      0.248        16996         543       722
## 100    3003855   1248700  436000      0.248        16996         538       696
##      rent50_3 rent50_4 Statename ave_f ave_c weather_rank
## 1       1411     1555    Alaska  26.6  -3.0          50
## 2       1415     1633    Alaska  26.6  -3.0          50
## 3       1342     1610    Alaska  26.6  -3.0          50
## 4       2000     2421    Alaska  26.6  -3.0          50
## 5       1828     2421    Alaska  26.6  -3.0          50
## 6       1952     2363    Alaska  26.6  -3.0          50
## 7       1534     1903    Alaska  26.6  -3.0          50
## 8       1336     1472    Alaska  26.6  -3.0          50
## 9       1583     1964    Alaska  26.6  -3.0          50
## 10      2013     2218    Alaska  26.6  -3.0          50
## 11      1858     2133    Alaska  26.6  -3.0          50
## 12      1781     2343    Alaska  26.6  -3.0          50
## 13      1601     1938    Alaska  26.6  -3.0          50
## 14      1375     1515    Alaska  26.6  -3.0          50
## 15      1095     1542    Alaska  26.6  -3.0          50
## 16      2260     2516    Alaska  26.6  -3.0          50
## 17      1560     1903    Alaska  26.6  -3.0          50
## 18      1885     2282    Alaska  26.6  -3.0          50
## 19      1431     1577    Alaska  26.6  -3.0          50
## 20      1770     1950    Alaska  26.6  -3.0          50
## 21      2230     2675    Alaska  26.6  -3.0          50
## 22      1191     1478    Alaska  26.6  -3.0          50
## 23      1225     1230    Alaska  26.6  -3.0          50
## 24      2264     2414    Alaska  26.6  -3.0          50
## 25      2192     2415    Alaska  26.6  -3.0          50
## 26      2256     2799    Alaska  26.6  -3.0          50
## 27      1922     2326    Alaska  26.6  -3.0          50
## 28      1647     1813    Alaska  26.6  -3.0          50
## 29      1902     2127    Alaska  26.6  -3.0          50
## 30       943     1184   Alabama  62.8  17.1           7
## 31       796      908   Alabama  62.8  17.1           7
## 32       955     1128   Alabama  62.8  17.1           7
## 33       818     1029   Alabama  62.8  17.1           7
## 34      1067     1145   Alabama  62.8  17.1           7
## 35      1088     1410   Alabama  62.8  17.1           7
## 36       890      956   Alabama  62.8  17.1           7
## 37      1050     1152   Alabama  62.8  17.1           7
## 38       905      977   Alabama  62.8  17.1           7
## 39       904     1012   Alabama  62.8  17.1           7
## 40      1136     1536   Alabama  62.8  17.1           7
## 41      1524     1751   Alabama  62.8  17.1           7
## 42       884      887   Alabama  62.8  17.1           7
## 43       784     1094   Alabama  62.8  17.1           7
## 44       989     1027   Alabama  62.8  17.1           7
## 45       953     1054   Alabama  62.8  17.1           7
## 46       911     1052   Alabama  62.8  17.1           7
## 47       844     1050   Alabama  62.8  17.1           7
## 48       818      887   Alabama  62.8  17.1           7
## 49      1258     1405   Alabama  62.8  17.1           7
## 50      1258     1405   Alabama  62.8  17.1           7
## 51       853      856   Alabama  62.8  17.1           7
```

```
## 52      1258    1405   Alabama   62.8   17.1           7
## 53       907    1036   Alabama   62.8   17.1           7
## 54      1258    1405   Alabama   62.8   17.1           7
## 55      1171    1482   Alabama   62.8   17.1           7
## 56       958    1159   Alabama   62.8   17.1           7
## 57       884     887   Alabama   62.8   17.1           7
## 58       954    1020   Alabama   62.8   17.1           7
## 59       879    1173   Alabama   62.8   17.1           7
## 60       832     917   Alabama   62.8   17.1           7
## 61       860    1046   Alabama   62.8   17.1           7
## 62      1136    1536   Alabama   62.8   17.1           7
## 63       903     947   Alabama   62.8   17.1           7
## 64       903     947   Alabama   62.8   17.1           7
## 65       884     887   Alabama   62.8   17.1           7
## 66       887    1094   Alabama   62.8   17.1           7
## 67      1136    1536   Alabama   62.8   17.1           7
## 68       884     888   Alabama   62.8   17.1           7
## 69      1067    1145   Alabama   62.8   17.1           7
## 70       884     887   Alabama   62.8   17.1           7
## 71       955    1128   Alabama   62.8   17.1           7
## 72       997    1099   Alabama   62.8   17.1           7
## 73       912     915   Alabama   62.8   17.1           7
## 74      1258    1405   Alabama   62.8   17.1           7
## 75       873     979   Alabama   62.8   17.1           7
## 76       884     887   Alabama   62.8   17.1           7
## 77       884     887   Alabama   62.8   17.1           7
## 78      1157    1402   Alabama   62.8   17.1           7
## 79      1088    1410   Alabama   62.8   17.1           7
## 80       807     891   Alabama   62.8   17.1           7
## 81       948    1045   Alabama   62.8   17.1           7
## 82       903    1031   Alabama   62.8   17.1           7
## 83       876     887   Alabama   62.8   17.1           7
## 84       894    1152   Alabama   62.8   17.1           7
## 85       896    1003   Alabama   62.8   17.1           7
## 86       981     984   Alabama   62.8   17.1           7
## 87       837     923   Alabama   62.8   17.1           7
## 88      1244    1440   Alabama   62.8   17.1           7
## 89       950    1156   Alabama   62.8   17.1           7
## 90      1136    1536   Alabama   62.8   17.1           7
## 91      1045    1265   Alabama   62.8   17.1           7
## 92       973    1117   Alabama   62.8   17.1           7
## 93      1027    1046   Alabama   62.8   17.1           7
## 94       882    1009   Alabama   62.8   17.1           7
## 95       971     975   Alabama   62.8   17.1           7
## 96       950    1156   Alabama   62.8   17.1           7
## 97       836     897   Arkansas  60.4   15.8           9
## 98       857     908   Arkansas  60.4   15.8           9
## 99       903     995   Arkansas  60.4   15.8           9
## 100      871    1058   Arkansas  60.4   15.8           9
```

```
#kable(usfacts_df, caption="US Homeless Data 2017 - 2020")

#New Variables
us_homeless_df$homeless_pop_ratio<- us_homeless_df$Total_PIT_Homeless/us_homeless_df$Population
```

The following scatter plots are generated to identify relationship of the different USFACTS variables with the PIT Homeless count.

```
#ggplot(us_homeless_df, aes(homeless_pop_ratio)) + geom_histogram(bins = 10, aes(y = ..density..)) + gg

# Adding regression line to identify relationship between the PIT Homeless count with the different fac

#ggplot(data=us_homeless_df, aes(x=State, y=Total_PIT_Homeless)) + geom_bar() + ggtitle("State PIT Home

ggplot(data=us_homeless_df, aes(x=Population, y=Total_PIT_Homeless)) + geom_point() + geom_smooth(method
```

`geom_smooth()` using formula 'y ~ x'
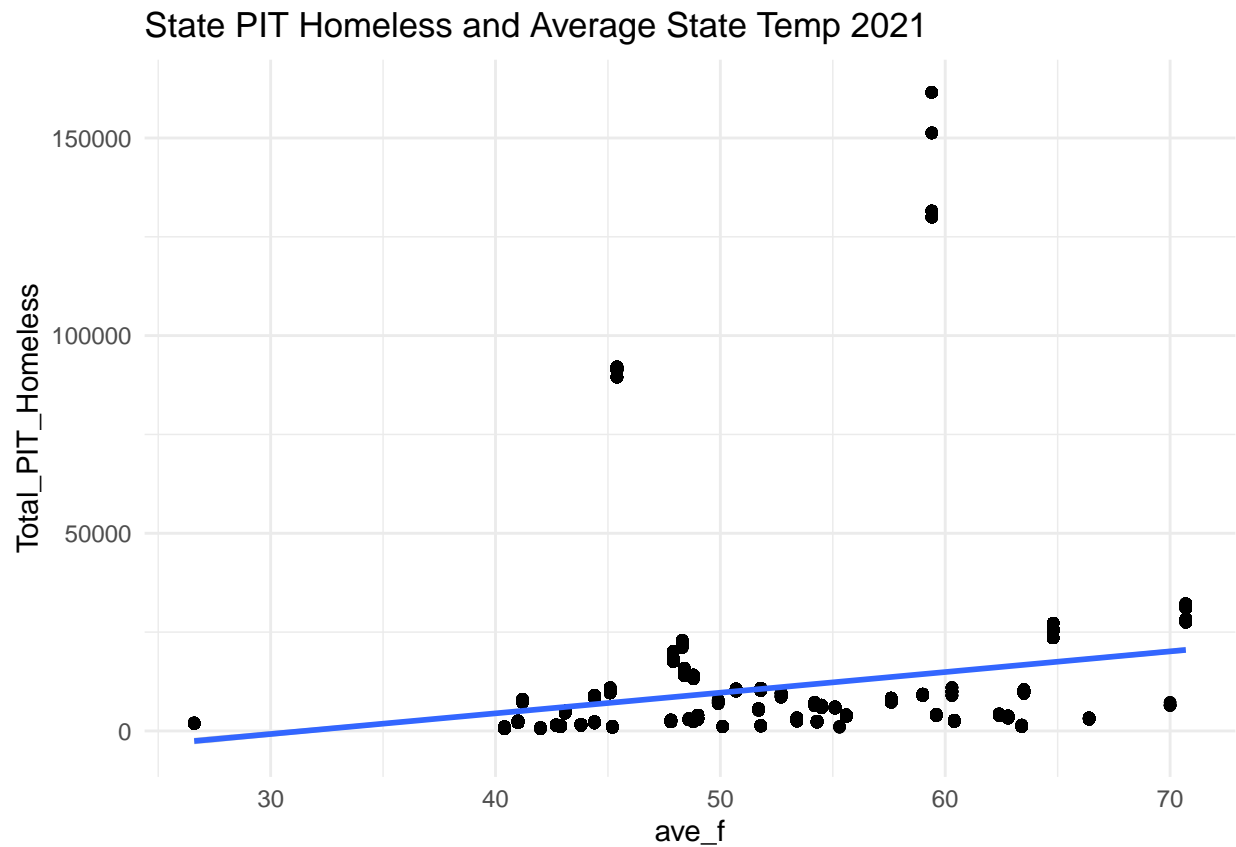

State PIT Homeless and Population Survey 2017 – 2019

```
ggplot(data=us_homeless_df, aes(x=Poverty, y=Total_PIT_Homeless)) + geom_point() + geom_smooth(method="
```

`geom_smooth()` using formula 'y ~ x'

Warning: Removed 9367 rows containing non-finite values (stat_smooth).

Warning: Removed 9367 rows containing missing values (geom_point).

State PIT Homeless and Poverty Survey 2017 – 2019
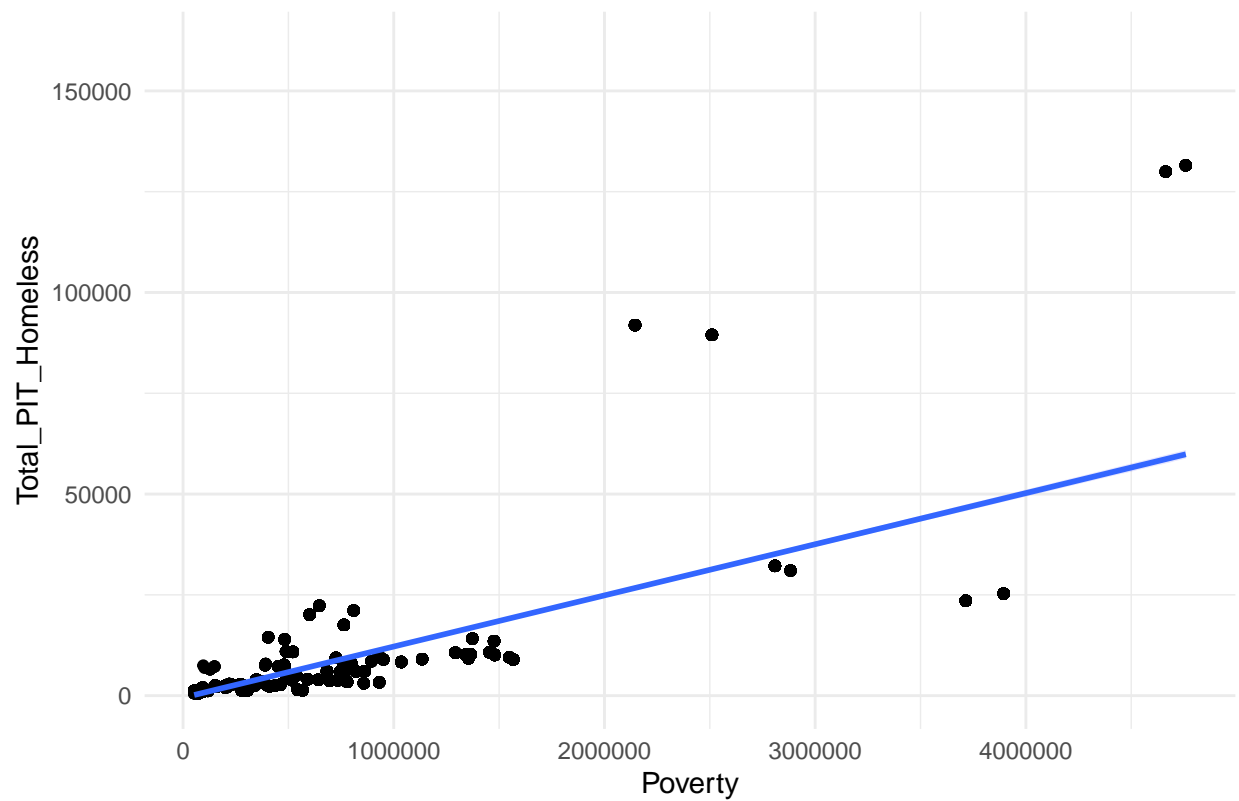

```
ggplot(data=us_homeless_df, aes(x=DepressPCT, y=Total_PIT_Homeless)) + geom_point() + geom_smooth(metho
```

`geom_smooth()` using formula 'y ~ x'

Warning: Removed 4704 rows containing non-finite values (stat_smooth).

Warning: Removed 4704 rows containing missing values (geom_point).

State PIT Homeless and Rate of people with Depression Survey 2017 –
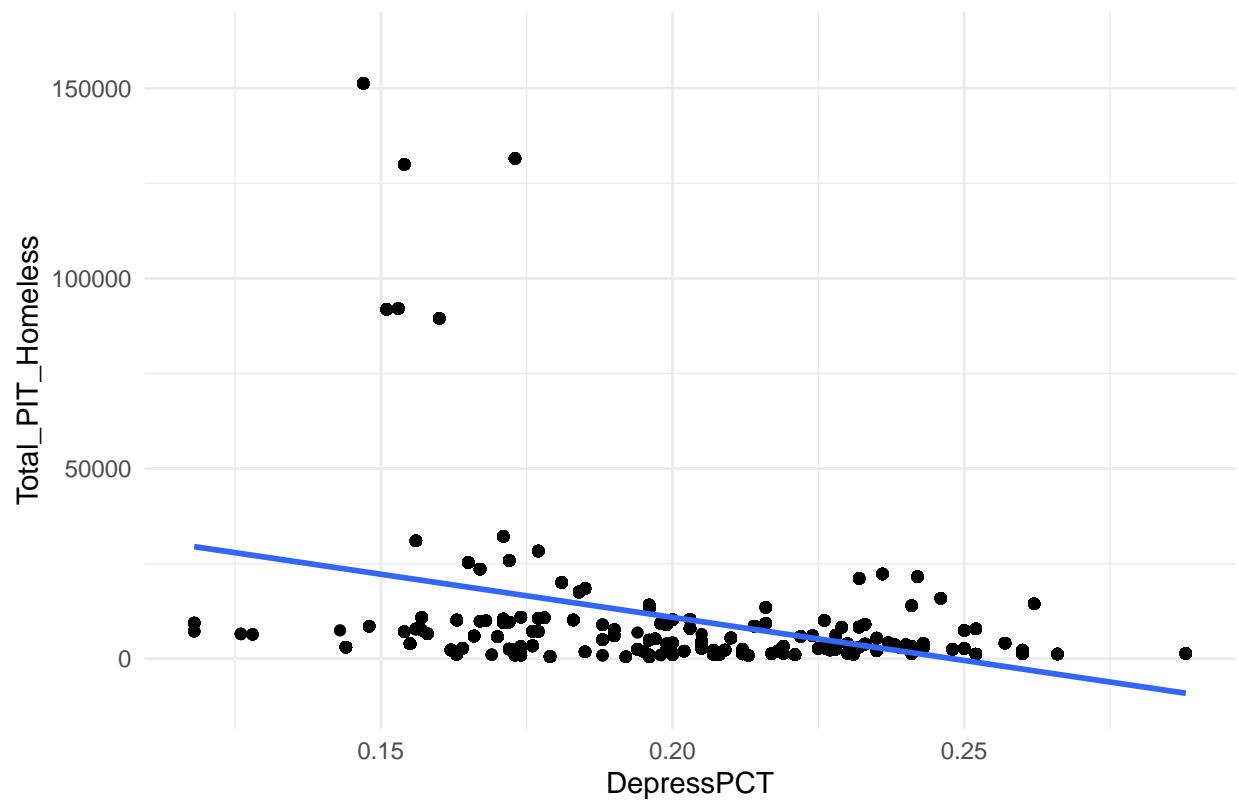

```
ggplot(data=us_homeless_df, aes(x=CrimeViolence, y=Total_PIT_Homeless)) + geom_point() + geom_smooth(me
```

```
## 'geom_smooth()' using formula 'y ~ x'
```

State PIT Homeless and CrimeViolence 2017 – 2019
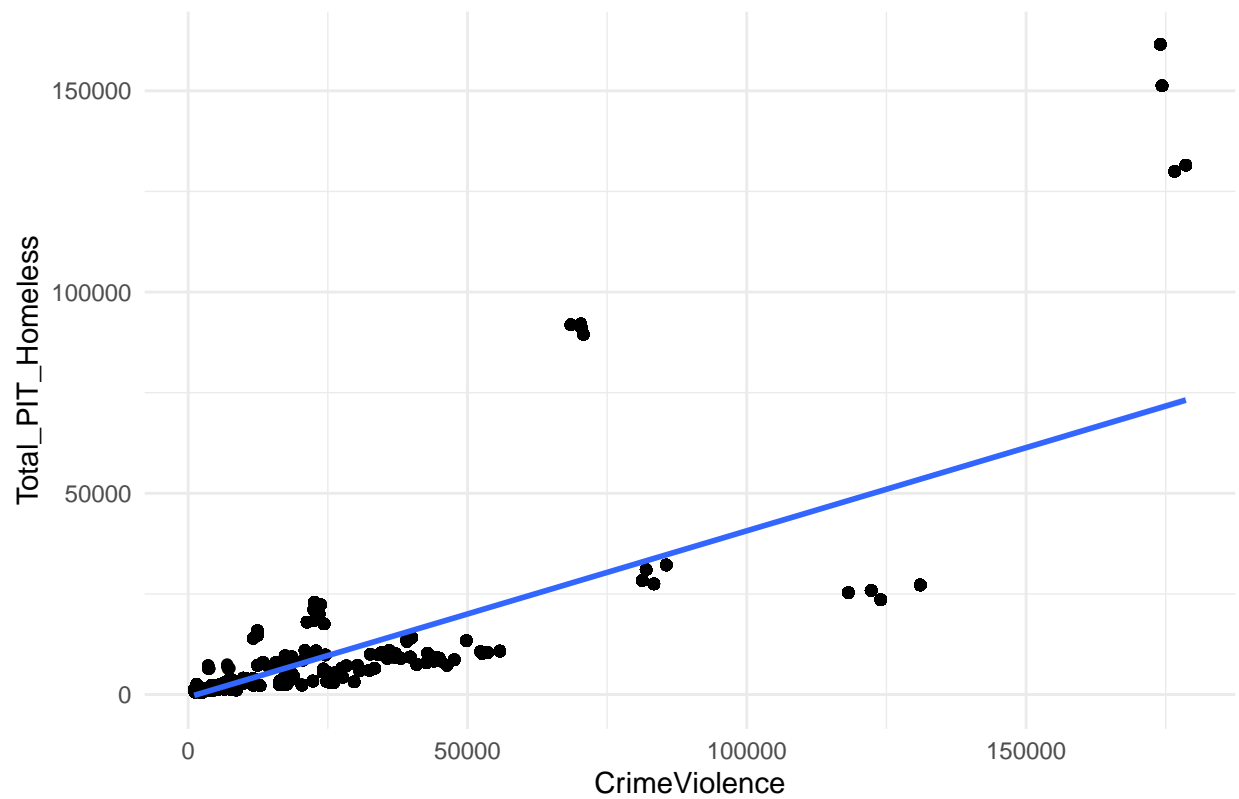

```
ggplot(data=us_homeless_df, aes(x=Employment, y=Total_PIT_Homeless)) + geom_point() + geom_smooth(method
```

`geom_smooth()` using formula 'y ~ x'

Warning: Removed 4683 rows containing non-finite values (stat_smooth).

Warning: Removed 4683 rows containing missing values (geom_point).

State PIT Homeless and Employment Rate 2017 – 2019
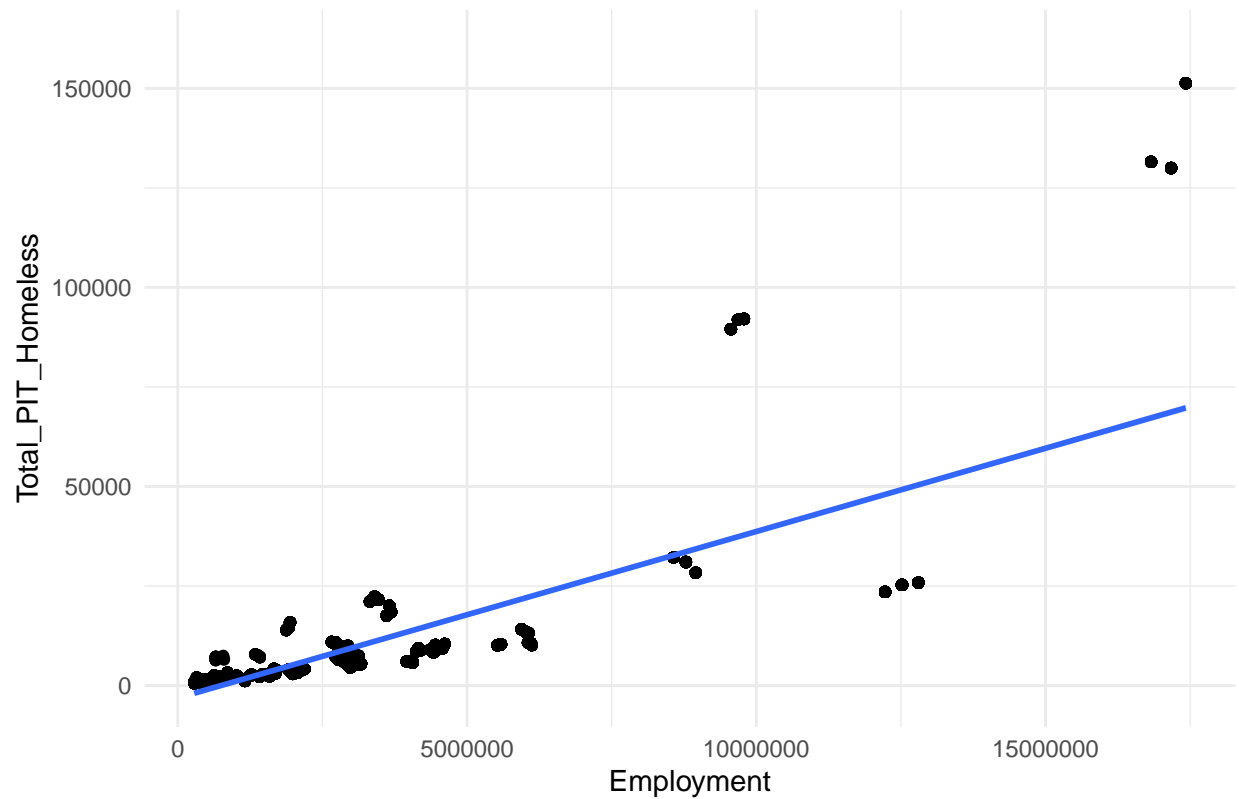

```
ggplot(data=us_homeless_df, aes(x=ave_f, y=Total_PIT_Homeless) ) + geom_point() + geom_smooth(method="lm
```

```
## `geom_smooth()` using formula 'y ~ x'
```

```
## Warning: Removed 4 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 4 rows containing missing values (geom_point).
```

State PIT Homeless and Average State Temp 2021


```
ggplot(data=us_homeless_df, aes(x=TOTAL_YEAR_BED, y=Total_PIT_Homeless) ) + geom_point() + geom_smooth(
```

```
## 'geom_smooth()' using formula 'y ~ x'
```

State PIT Homeless and Total Annual Bed/Service 2017 − 2019
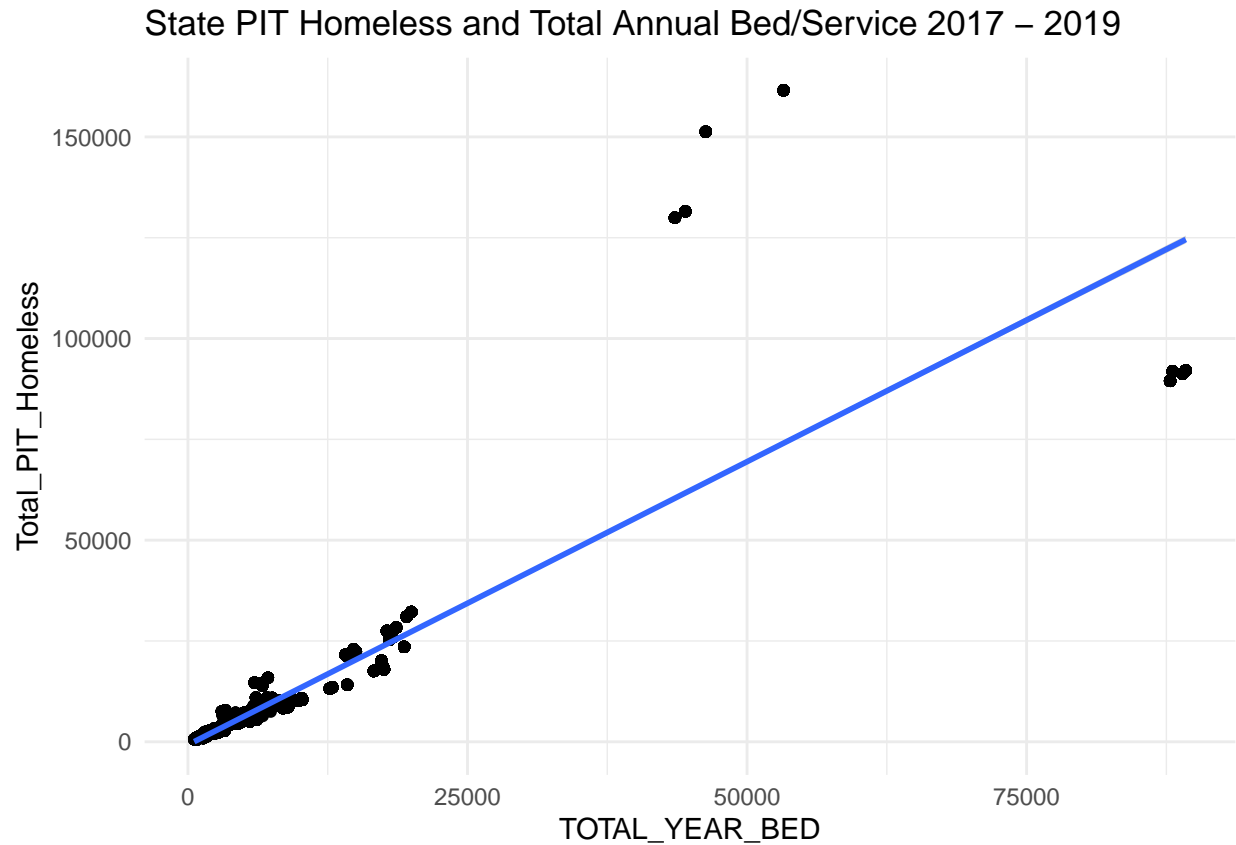
Questions for future steps and Do you plan on incorporating any machine learning techniques to answer your research questions? Explain.

- Next step is to run Correlation Analysis using these different USFACTS variables with the Total PIT Homelessness and report the result.
- Data in the final dataset contains possible predictors that are quantitative continuous variables and the plot generated seem to indicate linear relationship with the TOTAL PIT Homelesness thus this can be used for generating a multiple linear regression model.