Project 1: Wrangling, Exploration, Visualization

SDS322E

Data Wrangling, Exploration, Visualization

Alex Kim UT Eid: ak37642

Introduction Paragraph or two introducing your datasets and variables, why they are interesting to you, etc.

As I was looking through the different datasets, I saw the bad_drivers dataset. This was interesting because I also wanted to look at how the different factors tied into traffic deaths like speeding and the insurance costs associated with these accidents. These were interesting to me because I drive a lot in both my hometown of Houston and here in Austin. There are many times when I'll see people driving while texting or seeing news articles of people experiencing car accidents because they were under the influence or distracted while driving. Furthermore, I wanted to look at the different health indicators in each state, and how this is different. I was really interested in taking a look at how these health indicators tie into other aspects like transportation statistics. I was able to find a county dataset that essentially listed out all of the health indicators for specific counties in each state, which is under the "Count_Health_Rankings" dataset.

Some of the variables in my first dataset of "bad_drivers" include number of drivers involved in fatal collisions, percentage of those speeding, alcohol-impaired, not distracted, no prior accidents before this collision, cost of car insurance, and losses experienced by insurance companies across all 50 states. I found the "bad_drivers" dataset from the "fivethirtyeight" package. Furthermore, I wanted to tie this into how the different life stages differed across states. Some of the variables for my second dataset of "County_Health_Rankings" include life expectancy, deaths, percent of ethnicities, number of people insured, and more across counties in the 50 states in the United States. I found this dataset from Countyhealthratings.org under the Rankings data and documentation page. ****** I would expect to see that if there were more traffic accidents in one place, we may see a slight decrease/difference in life expectancy and a slight increase in death rate.

I chose the bad_drivers dataset from the fivethirtyeight package and the county health ratings from Countyhealthratings.org (under the Rankings data and document page). I wanted to look at these datasets because I am very big on keeping up with the news. One thing that I always see are news articles on drunk driving, speeding, or just not paying attention lead to people losing their lives due to these accidents. I know that these are just a few factors; therefore, I wanted to bring in the County health rankings data because the data provides more insight into the health aspect of these various counties in each state of the United States. I would expect to see that if there were more traffic accidents in one place, we may see a slight decrease/difference in life expectancy and a slight increase in death rate.

Some of the variables in my first dataset of "bad_drivers" include number of drivers involved in fatal collisions, percentage of those speeding, alcohol-impaired, not distracted, no prior accidents before this collision, cost of

car insurance, and losses experienced by insurance companies across all 50 states. Furthermore, some of the variables for my second dataset of "County_Health_Rankings" include life expectancy, deaths, percent of ethnicities, number of people insured, and more across counties in the 50 states in the United States.

Expand on potential associations you may expect, if any.

```
# your joining code
joineddata <- full_join(data1, data2, by = c(state = "State"))

# your joining code
not_in_data1 <- anti_join(data1, data2, by = c(state = "State"))
not_in_data2 <- anti_join(data2, data1, by = c(State = "state"))</pre>
```

Joining/Merging I combined both of my datasets by the common variable of "states." To do this, I utilized the full_join function to retain all of my rows, which is why there was 3,193 rows, one row for each county in each state. Furthermore, the two datasets were joined by the common ID of "state." When fully joined, there were 3,193 rows with 72 columns. Before the full join, the bad_drivers dataset had 51 rows of the 50 states in the U.S. as well as D.C. with 8 variables. Also before the join, the County health ratings data had 3,193 rows, for each county in the each state of the U.S. along with 65 variables. There were 51 unique IDs, or states, for both the bad_drivers and county health rating datasets. Since both had only unique IDs of the 51 states, there were no IDs that were different from each other in both datasets. Since both datasets were joined by the common function of states, all 50 states in the United States including D.C. were included in both datasets. No observations were dropped and were actually retained by the full join function as well as the common ID being the same for each dataset. The NAs that are located in the full join and extra columns will be tidied. which will be shown above in the tidying section.

Tidying: Reshaping If your datasets are tidy already, demonstrate that you can reshape data with pivot wider/longer here (e.g., untidy and then retidy). Alternatively, it may be easier to wait until the wrangling section so you can reshape your summary statistics. Note here if you are going to do this.

```
# your tidying code (if applicable; can also wait until
# wrangling section)
clean_joineddata <- joineddata %>% select(state, num_drivers,
    perc_alcohol, insurance_premiums, County, `Life Expectancy`,
    '# Deaths', '% Frequent Physical Distress', '# Uninsured', 
`Median Household Income', 'Homicide Rate', '# Asian', '# American Indian & Alaska Native',
    * Native Hawaiian/Other Pacific Islander, * Hispanic,
    '# Black', '# Non-Hispanic White', '% Rural')
clean_joineddata <- clean_joineddata %>% rename(DriverDeaths = num_drivers,
    AlcoholRelated = perc_alcohol, LE = `Life Expectancy`, Deaths = `# Deaths`,
    PhysicalDistress = `% Frequent Physical Distress`, Uninsured = `# Uninsured`,
    HouseholdIncome = `Median Household Income`, Homicide = `Homicide Rate`,
    Asian = `# Asian`, AmericanIndianAlaskaNative = `# American Indian & Alaska Native`,
    PacificIslander = `# Native Hawaiian/Other Pacific Islander`,
    Hispanic = `# Hispanic`, Black = `# Black`, White = `# Non-Hispanic White`,
    PercRural = '% Rural', Premiums = insurance_premiums)
clean_joineddata <- clean_joineddata %>% group_by(state) %>%
    summarize_at(c("LE", "Deaths", "DriverDeaths", "AlcoholRelated",
        "PhysicalDistress", "Uninsured", "HouseholdIncome", "Homicide",
        "PercRural", "Premiums", "Asian", "AmericanIndianAlaskaNative",
        "PacificIslander", "Hispanic", "Black", "White"), na.rm = TRUE,
```

```
.funs = list(mean = mean))

clean_joineddata2 <- clean_joineddata %>% pivot_longer(-1) %>%
    separate(name, into = c("name", "stat")) %>% pivot_wider(names_from = "name",
    values_from = "value") %>% select(-stat)
```

Since there were so many different variables, I wanted to just select 10 different unique variables and then variables of different ethnicities. I wanted to untidy and tidy my data first before I started on the wrangling portion, and I just wanted to clean up the names before moving on. In this case, I had to first select the columns I wanted and then remove the extraneous ones like percent of the population over 65, graduation rate, GPA, child mortality rate, infant mortality, etc. There were over 72 columns with the data joined. With this, I made a cleaner version of the joineddata (clean_joineddata). I then wanted to just make another column of whether the county was rural or not, so I mutated the % rural with the ifelse function. If the percentage was greater than 50%, I put that as rural and if it was less, than I didn't consider it to be rural. I then renamed all of the columns because I was having difficulty when it came to tidying the data with the special characters like %, __, and # signs. I then used the pivot_longer and pivot_wider functions to show that I know how to tidy. With these, I found the mean and standards of each state with just the variables of life expectancy, deaths, driver fatalities, and alcohol related traffic deaths.

```
# % of BIPOC in each county
clean_joineddata2 <- clean_joineddata2 %>% group_by(state) %>%
   mutate(`% BIPOC` = (sum(Asian, AmericanIndianAlaskaNative,
       PacificIslander, Hispanic, Black))/(sum(Asian, AmericanIndianAlaskaNative,
       PacificIslander, Hispanic, Black, White)) * 100)
clean joineddata2 <- clean joineddata2 %>% mutate(Diverse = ifelse(`% BIPOC` >
    50, "high", "low"))
# Summary statistics for 10 numeric variables
clean_joineddata2 %>% summarize_at(c("DriverDeaths", "AlcoholRelated",
    "Premiums", "LE", "Deaths", "PhysicalDistress", "Uninsured",
    "HouseholdIncome", "Homicide", "PercRural", "Asian", "AmericanIndianAlaskaNative",
    "PacificIslander", "Hispanic", "Black", "White"), na.rm = TRUE,
    .funs = list(mean = mean, sd = sd, max = max, min = min,
       n = n_distinct)) %>% pivot_longer(contains("_")) %>%
    separate(name, into = c("variable", "stat")) %>% pivot_wider(names_from = "variable",
    values_from = "value") %>% knitr::kable()
```

Wrangling

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\textbf{87.8153} \\ \textbf{535} \\ \textbf{599.146} \\ \textbf{184.83347}.14 \\ \textbf{184.83347}$ Louisianmin20.5 Louisiana 1 1.00 1.000**0**000001.000001.00001.00 1.000001.000 1.00001.00 Maine meal 5.1 30 $661.878.372478.822394118715.529490.123.000799032249.41149.0588\ 53.52942788.22535.7647011.41$ Maine sd NA NANA NA NA 30 $661.878.372478.822394118715.529490.123.000799032249.41149.0588\ 53.52942788.22535.7647011.41$ Maine max15.1 Maine min15.1 30 $661.878.372478.822394118715.529490.123.000799032249.41149.0588\ 53.52942788.22535.7647011.41$ Maine n 1.0 1 1.00 1.000**0**000001.000001.00001.00 1.000001.000 1.00001.00 Marylantheah2.5 32 $1048. \textbf{78}. 51 \textbf{200} 1.8 \textbf{410} 2000 \textbf{35} 42.5 \textbf{790} \textbf{3} 16.0 \textbf{4443} \textbf{4732} \textbf{2320} 04.2 \textbf{2407}. 2000 \ 536.400 \textbf{50} 505.7 \textbf{548} 2.2 \textbf{320} \textbf{62}.48$ NANAMarylansh NA NANA NA NA NANANA NA NA NA NANAMarylanthaxl 2.5 32 1048.78.512671.8 \pm 0.0003542.5769316.04.44433.47322504.224470.2000 536.40050505.7760821232062.48 1048.78.512671.8 \pm 0.0003542.5769316.04.44433.47322504.224470.2000 536.40050505.7760821232062.48 Marylandin12.5 32

state stat Driver Alexathol Predatier Ins Death Physical Districted set bloth Death Physical Districted set and American Indian federation white Maryland 1.00 1.0000000001.00001.00001.00 1.000**D0000000**0000 1.0000 $1.000001.000\ 1.00001.00$ Massachuseates2 35 Massachsustet NsA NANA NA NA NANA NANA NA NA NA NANA NA NA 1011.**\$4**.44**\$67**9.7B**B**333**32**260.1**\$627**9.0**7**.363**63**6**6603**35**45070**.6667 988.000DB98**76793**4.**253**740.00 Massachnsext8s2 35 Massachmiet 8s2 35 1011.**\$4**.44**%67**9.7BB**3**33**322**60.**1832**79.0**7**.363**63**6**3**6**363**6**3**4**500**4.6667 988.0000B98**7**6**740**8 Massachusettls0 1 1.00 1.0000000001.00001.00001.00 $1.000001.000\ 1.00001.00$ Michigameah4.1 28 $1110. \\ 78. \\ 103000 \\ 8. \\ 11. \\ 90. \\ 9048779. \\ 693695. \\ 44. \\ 307692189009. \\ 111258. \\ 6905. \\ 99. \\ 666672576. \\ \textbf{327}\\ 35. \\ \textbf{3877}\\ 30. \\ 05. \\$ NA NA NA Michigans NA NANANANA NA NA NA NA NANA NA NA Michigamaxl4.1 28 Michigamin14.1 28 $1110. \\ 78. 10300 \\ 8. 1140 \\ 904877 \\ 9. 6366 \\ 95. 44. \\ 30769 \\ 21800 \\ 9. 1425 \\ 8. 6905 \\ 99. 6666 \\ 67257 \\ 6. \\ 3273 \\ 5. \\ 8877 \\ 30. \\ 05$ Michigam 1 1.00 1.000**0**00001.00001.00001.00 1.000**0**000**0**00000 1.0000 1.000001.000 1.00001.00 Minnesotaea 9.6 29 $777.180.180684.659.7500997.5969448.920.66666.79456457.887620.8864 \ 95.77277162.08695.98018367.02$ Minnesosal NA NANA NA NA NANANANA NA NA NA NANA NA $777.180.180684.659.7500997.5969448.9266666.79454457.88760.8864\ 95.77273162.08695.98018367.02$ Minnesotaax9.6 29 Minnesotain 9.6 29 $777.180.180684.659.17500997.5969448.92.66666.79456457.887600.8864\ 95.77273162.08695.98018367.02$ Minnesona 1.0 1 1.00 1.0000000001.00001.00001.00 1.000**00000000**00000 1.0000 1.000001.000 1.00001.00 31 896.074.1502042.62653494813.0361753.664.5172488795.95450.722943.51802/412.22/9834.4/0/439.33 Mississippeah7.6 Mississipsoli NA NANA NA NA NANA NA NA NA NA NA NANA NA NA Mississippix 17.6 896.074.1502042.626354942013.03611753.664.51724387675.95450.7229 $43.5180 \overline{2} 412.2 \overline{2} 6834.4 \overline{4} \overline{0} 439.33$ 31 Mississippin17.6 31 896.074.150**20**2.6**26**.**3**494**0**13.03**6**1753.6**6**4.51**72**.**4**3**6075**.954**5**0.7229 43.51802/412.22/9834.4/0/439.33 Mississippi 1.0 1 1.00 1.0000000001.00001.00001.00 1.000**D00000D0**0000 1.0000 $1.000001.000\ 1.00001.00$ Missourimeah6.1 790.3**2**6.76**63**81.3**74.3**310**B**404.4**693**91.3**7**.368**46**.148**229**8.4**628**.9138 169.948**28**32.8**92**270.**8345**0.21 34 Missourisd NA NA NA NA NA NANANANA NA NA NANANA NA NA Missourimaxl6.1 34 790.3**2**6.76**53**81.3**79.3**310**B**404.4**693**91.3**7**.368**6**2.148**2292**8.4**627**.9138 169.948**28**32.8**92**270.**8345**0.21 34 $790.3 \\ \mathbf{2}6.76 \\ \mathbf{6}5 \\ \mathbf{2}81.3 \\ \mathbf{7}4.9 \\ \mathbf{3}10 \\ \mathbf{8}404.4 \\ \mathbf{4}69 \\ \mathbf{3}91.3 \\ \mathbf{7}.368 \\ \mathbf{4}6.4 \\ \mathbf{2}22 \\ \mathbf{2}8.4 \\ \mathbf{6}28.9138$ $169.948 \textcolor{red}{2} \textcolor{red}{3} 2.89 \textcolor{red}{2} 270. \textcolor{red}{3} \textcolor{red}{3} \textcolor{blue}{4} \textcolor{blue}{5} 0.21$ Missourimin16.1 1.00 1.0000000001.00001.00001.00 Missourin 1 1.000001.000 1.00001.00 Montanamea 21.4 816.278.97690.75621.2631610.4561629.261.818748257368.017494.5965 32.28070518.9202.31382200.3944 Montanasd NA NANA NA NA NANANANA NA NA NA NANA NA NA 816.278.97990.7552.2631510.4551629.26.81874257368.0124594.5965 32.28070518.9202.3132200.39 Montanamax21.4 44 Montanamin21.4 44 $816.278.97590.7552.2631510.4551629.20.81874257345.012494.5965\ 32.28070518.9202.3132200.39$ 1.00 1.000**D**@0001.00001.00001.00 1.000**D**@00**D**@000 1.0000 Montanan 1 $1.000001.000\ 1.00001.00$ Nebraskaneah 1.9 35 732.289.258073.3623.5531927.8726105.59.2500001441631.6623.0851Nebraskad NA NANA NA NA NA NA NANA NA NA NANA NA NA 49.9787 2673.2 20817.6 320695.15Nebraskanax14.9 35 732.289.25807.3629.5531927.8726105.59.2500001441631.6623.0851Nebraskanin14.9 35 732.2**8**9.25**8**7**7**3.36**23**.5531**5**27.87**23**105.5**3**9.250**700**014**1**6**3**1.6**623**.0851 49.9787**2**673.2**28**17.6**32**695.15 Nebraska 1.0 1 $1.00\ 1.000 \mathbf{D} \textcircled{0}0001.00001.00001.00$ $1.000001.000\ 1.00001.00$ Nevada meah 4.7 32 $1029. \$8. 42\$5\$4. 354.90006360. 66\$713. 15. 1250700729296. \$2722. 7778\ 2731. 669007063. 68\$79. 55\$881. 4481. 4491. 44$ Nevada sd NA NA NA NA NANANANA NA NA NANANANANA NA Nevada maxl4.7 32 $1029. \\ \mathbf{787}. 42 \\ \mathbf{554} \\ \mathbf{4}. 35 \\ \mathbf{4}. 90000 \\ \mathbf{3}60. 66 \\ \mathbf{671} \\ \mathbf{3}. 15. 125 \\ \mathbf{4}000 \\ \mathbf{722} \\ \mathbf{2722}. \\ \mathbf{7778} \\ \mathbf{2731}. \\ \mathbf{660000} \\ \mathbf{665} \\ \mathbf{5829}. \\ \mathbf{5548} \\ \mathbf{81}. \\ \mathbf{44}$ Nevada min14.7 32 Nevada n 1.0 1 1.00 1.000**0**00001.00001.00001.00 1.000**0**000**0**00000 1.0000 1.000001.000 1.00001.00 New meahl.6 30 $746.579.262888.909.90909142.0700350.00.714286945227.2727.0000 \quad 122.1819225.27346.12218897.64$ Hampshire New sd NA NANA NA NA NANANA NA NA NA NANANANANAHampshire $746.579.262888.909.90909142.0700550.00.714286945327.2727.0000 \\ 122.1819925.27546.12218897.64$ New max11.630 Hampshire New $\min 11.6$ 30 $746.579.26 \\ \textbf{2638} \\ \textbf{2638} \\ \textbf{2919}.90909142.0 \\ \textbf{70005} \\ \textbf{20.00}.714 \\ \textbf{286} \\ \textbf{47327}.27 \\ \textbf{277} \\ \textbf{27000} \\ \textbf{22.181} \\ \textbf{2925}.27 \\ \textbf{364} \\ \textbf{6.122} \\ \textbf{2897}.64$ Hampshire New n 1.0 1.00 1.0000000001.00001.00001.00 1.000001.000 1.00001.00 Hampshire

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New Jersey	me	ahl.2	28	1301	. 32 .9	0 832 5.	909.590)9 6 980.	3 63 692	.6836	8 42 .4	2 806 19.	5939. 0000	930.90)9 105 88()4.000	1 4.9099 9.55
New Jersey	sd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New Jersey	ma	x11.2	28	1301	. 72 .9	0 432 5.	909.590)9 6 980.	3 63 1692	.6836	8 42 .4	2 876 19.	5939. 0000	930.90)9 105 88() 4.000	1 4.4099 9.55
New Jersey	miı	n11.2	28	1301	. 32 .9	0 832 5.	909.590)9 6 980.	3 63 692	.6836	8 42 .4	2 806 19.	5939. 0000	930.90)9 105 88() 4.000	1 4.9099 9.55
New Jersey	n	1.0	1	1.00	1.00	00000	01.0000	001.000	01.00	1.00	0000	000000	1.0000	1.0000	001.000	1.000	01.00
New Mexico	me	ah8.4	27	869.	857.5	3 073 1.	3 03 .588	824598.	8 465 32	.98.86	3 63 .6	7 226 8.8	235 17.294	1196.52	29 40 76	1. 232 8.	445448.82
New Mexico	sd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New Mexico	ma	x18.4	27	869.	857.5	3 073 1.	3 03 58	824598.	8 465 32	.98.86	3 63 .6	7 220 8.8	235 17.294	1196.52	29 40 76	1. 232 8.	445448.82
New Mexico	miı	n18.4	27	869.	857.5	3 073 1.	3 03 .58	824598.	8 465 32	.98.86	3 63 .6	7 226 8.8	235 17.294	1196.52	29 40 76	1. 232 8.	445448.82
New Mexico	n	1.0	1	1.00	1.00	00000	01.000	001.000	01.00	1.00	0000	0000000	1.0000	1.0000	001.000	1.000	01.00
New York	me	ah2.3	29	1234	. 39 .6	7 936 9.	6 82.5 5	87 3 278.	6 649 62	.834.00	0 03.7	8 456 57.	6023 .7460	858.22	2222908	8 1828 Ø	6 .342174 041.90
New York	sd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New York	ma	x12.3	29	1234	. 39 .6	7 936 9.	6 82.5 5	87 3 278.	6 649 62	.834.00	0 03 .7	8 456 57.	6023 .7460	858.22	2222908	818 28 Ø	6 .342174 041.90
New	miı	12.3	29	1234	. 39 .6	7 936 9.	6 82.1 58	87 3 278.	6 649 62	.834.00	0 03 07	8 456 57.	6023 .7460	858.22	2222908	818 28 18	6 .342174 041.90
York New	n	1.0	1	1.00	1.00	00000	01.000	001.000	01.00	1.00	0000	0000000	1.0000	1.0000	001.000	1.000	01.00
York North Carolina		ah6.8	31	708.	2 4 7.0	8 269 1.	5234867	32 7 527.	6 286 98	.470.28	3 68 49	3 668 9.7	322 9.1485	260.00	020031	3. 4463 68	8. 43050 41.62
North	sd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carolina North	ma	x16.8	31	708.	2 4 7.0	8 269 1.	5234867	32 7 527.	6 286 98	.470.28	3 68 49	3 668 9.7	322 9.1485	260.00	020031	3. 4463 68	8. 43050 41.62
Carolina North	miı	n16.8	31	708.	2 4 7.0	8 269 1.	523487	32 3 527.	6 286 98	.470.28	3 68 49	3 668 9.7	322 9.1485	260.00	020031	3. 4463 68	8. 43 5041.62
Carolina North	n	1.0	1	1.00	1.00	00000	01.000	001.000	01.00	1.00	0000	000000	1.0000	1.0000	001.000	1.000	01.00
Carolina North	me	a 2 3.9	42	688.	75 9.7	4 330 .2	5 53 .888	88 9 29.2	9 63 698	.924.20	0 00 07	7 4793 .29	163 72.7778	22.777	78167.	8 92 0.9	06 23 6611.59
Dakota North	sd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dakota North	ma	x23.9	42	688.	7 5 9.7	4 330 .2	5 53 .888	88 9 29.2	9 63 698	.924.20	0 80 07	7 4793 .29	63 72.7778	22.777	778167.	8 92 0.9	06 23 611.59
Dakota North	miı	n23.9	42	688.	75 9.7	4 330 .2	5 53 .88	88929.2	9 63 698	.921.20	0 80 07	7 4793 .29	63 72.7778	22.777	778167.	8 92 0.9	06 23 0611.59
Dakota North	n	1.0	1	1.00	1.00	00@00	01.000	001.000	01.00	1.00	0000	000000	1.0000	1.0000	001.000	1.000	01.00
Dakota Ohio Ohio	me	ah4.1 NA	34 NA	697. NA				80 2 877. NA	6 529 45 NA		4468) NA		7674 .2697 NA	158.53 NA		2. 332 88 NA	8. 2090 47.01 NA

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	x14.1	34	697.7 3 6.83 37 99.9 82.6 280 2 877.6 529 45.2 4 .574 4 76. 9 3 6 750.0 7 674.2697 158.539 B3 572. 332 88. 20 6047.01
Ohio min	n14.1	34	697.7 3 6.83 37 99.9 82.6 280 2 877.6 629 45.2 4 .574 4 6393 65 30.0 6 64.2697 158.539 B3 572. 332 88. 2090 47.01
Ohio n	1.0	1	$1.00\ 1.000 \\ 00001.00001.00001.00001.000 \ 1.000 \\ 000000000000000000 \ 1.00000 \ 1.000001.000 \ 1.00001.000$
Oklahomme		29	881.575.28 056 0.4 85 98462109.542900.17.046 63 2252436.79365.4872 220.02564233. 3592 4.564258.67
Oklahon sa l		NA	NA
Oklahomma		29	$881.575.28 \\ 056 \\ 0.48 \\ 59846 \\ 22109.54 \\ 2900.17 \\ 0.046 \\ 63 \\ 225 \\ 248 \\ 6.79 \\ 365.4872 \\ 220.025 \\ 642 \\ 33.79 \\ 24.56 \\ 249 \\ 58.67 \\ 249 $
Oklahomaiı		29	881.575.28 056 0.4 85 .98462109.542900.17.046 63 .252436.79365.4872 220.02564233.75924.564958.67
Oklahomna		1	1.00 1.000DDD0001.00001.00001.00 1.000DDDD0000 1.0000 1.00001.000 1.00001.00
Oregon me		26	$804.779.34 \mathbf{\overline{2}} \mathbf{\overline{4}} \mathbf{\overline{2}} \mathbf{\overline{3}} \mathbf{\overline{2}} \mathbf{\overline{3}} \mathbf{\overline{2}} \mathbf{\overline{3}} \mathbf{\overline{2}} \mathbf{\overline{3}} $
Oregon sd		NA	NA
Oregon ma		26	$804.779.34 \mathbf{\overline{2}70} 2.914 \mathbf{\overline{2}70} 270639.65 \mathbf{\overline{5}5} 68.57.823 \mathbf{\overline{5}2} \mathbf{\overline{9}} 8611966. \mathbf{\overline{9}768}.3784 \ 1040.273 \mathbf{\overline{2}76} 40.4765.4071107.24$
Oregon min		26	804.779.342702.914290270639.658568.53.8235298611966.49768.3784 1040.27326740.43765.40711107.24
Oregon n		1	1.00 1.000 D 00001.000001.00001.00 1.000 D 000 D 0000 1.0000 1.00001.000 1.00001.00
Pennsylvan		31	905.9 78.28 235 6.4 7207 205 35 539.9 382 40.6 3.5 77 478 51 4177 2.8 429 9.794 1293.941 293.941
Pennsylvadn		NA	NA
Pennsylvan		31	905.978.282366.472072053539.9382940.63.57747895144772.85299.7941 293.94128416.47618.2829405.24
Pennsylvain		31	905.978.282856.472072053539.9382940.63.577477805144772.85299.7941 293.94128416.477618.28291405.24
Pennsylvan		1	1.00 1.000D00001.00001.00001.00 1.000D00D0000 1.0000 1.00001.000 1.00001.00
Rhode me	ant.1	38	1148. 99 .41 369 74.3BB 3 66667489.3 773 02.6 7 .333BB 3 3B 3 3B 3 878. 3667 .6667 708.333 37 548 .2 D 6 55. 23 B 3 77.00
Island	TN T A	D.T.A	NIA
Rhode sd	NA	NA	NA
Island	-111	20	1140 QO 41%@MA 9DD % 6667400 9 990 00 6 7 999DD 99DD 99DD 8@F7 6667 700 999D 9 740 MINEE F 9 DD 9 77 00
Rhode ma Island	XII.I	38	1148. 99 .41 367 4.3BB 36 66 7 489.3 773 02.6 7 .333BB 3 3 B3 B78. 3667 .6667 708.333 7 548. 2 0 6 55. 23 B 3 77.00
Rhode min	11 1	38	1148. 90 .41 567 4.3BB .5 666 I 7489.3 773 02.6 Z .333BB .333B 78. 3667 .6667 708.333 57 548 .2 D 6 55 .25B3 77.00
Island	n11.1	38	1148.59.41.0094.3BB.00004489.366902.04.333BB.13B3B18.0001.0001.00033336348.2D003.23B311.00
Rhode n	1.0	1	1.00 1.000 D @0001.00001.00001.00 1.000 D @00 D @000 1.0000 1.00001.000 1.00001.00
Island	1.0	1	1.000 1.000001.000001.000 1.00000 1.0000 1.0000 1.0000 1.00001.000
	a 2 3.9	41	858.975.61 3/2 48.1 27.2 766 2 322.34 9 452.640.93 58.1529079 4.7 22 91.5319.215.531 23 068. 83/3 469.87
Carolina	a4.9.9	41	000.3#0.01@1240.1124.2 0010022.040401.00044.111104004.0010-0010-000100.000100.00
South sd	NA	NA	NA
Carolina	1111	1111	
South ma	x23.9	41	858.975.61 30 248.1 27.2 766 2 322.34 9 452.640.93 58.1529079 4.7 22 91.5319 215.531 2 3068. 878 86. 83 39669.87
Carolina			
South min	n23.9	41	858.975.61 3/2 48.127.2766 2 322.3 49 452.640.93 58.1529079 4.72 2 91.5319.215.531 2 3068. 838 86. 839 469.87
Carolina			
South n	1.0	1	1.00 1.000D00001.00001.00001.00 1.000D000D0000 1.0000 1.00001.000 1.00001.00
Carolina			
South me	ah9.4	33	669.3 7 8.00 324 .64 5 2.5074 8 92.05 95 070.9 1 0.16 7662428 .92 23 88.1791 23.4925 1 114.9 58 0.50 7 1523.97
Dakota			
South sd	NA	NA	NA
Dakota			
South ma	x19.4	33	669.3 7 8.00 324 .64 5 2.507 48 92.05 95 070.9 1 0.16 7662428 .92 23 88.1791 23.4925 1 114.9 58 0.50 7 5523.97
Dakota			
South min	n19.4	33	$669.378.002 24.645 2.5074 392.05 95070.91 0.1676 624 28.92 2388.1791\ 23.4925 4114.95 80.50275 23.9710.01 0.1676 624 11.910.1910.1910.1910.1910.1910.1910.19$
Dakota			
South n	1.0	1	1.00 1.000 D @0001.000001.00001.00 1.000 D @00 D @000 1.0000 1.00001.000 1.00001.00
Dakota			
Tennessene	ah9.5	29	$767.974.942\mathbf{Z}92.810239581641.6504245.72.92156.092833.2580.4375 137.0418753.722787.294573.75$
Tennesseed		NA	NA
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Tennesseenin	n19.5	29	767.9 7 4.94 279 2.8 123 958 B 641.6 502 45.7 2 .921 56. 99 289 3.2 580 .4375 137.041 87 53.7 22 787. 2945 73.75

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            stat Driver Alexathol Predatier Ins Death Physical Districted set bloth Death Physical Districted set and American Indian federation white
Tennessee
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                               38
                                       1004.75.482478.467\\ 28039708.266793.81.3763\\ 24661846.\\ 2222.9569\\ 338.91799396.\\ 279063.99781.56
Texas
            meal 9.4
Texas
            sd NA
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                                       1004.75.482478.46728036708.266793.81.376324681846.2282.9569.338.917903396.27963.68731.56
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                                       716.279.43987.73BB.66662748.1363085.827.25070441B395.2325.4667
                                                                                                                                          32.9333B695.86086.933005.20
Vermontsd NA
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                                       716.2\mathbf{7}9.43\mathbf{983}.73\mathbf{B}8.6666\mathbf{7}48.13\mathbf{6}\mathbf{3}085.8\mathbf{7}.250\mathbf{7}\mathbf{9}\mathbf{0}41\mathbf{B}\mathbf{3}\mathbf{9}5.2\mathbf{3}\mathbf{2}\mathbf{5}.4667
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                               27
                                       768.937.408  \mathbf{223}.012.98507432.49  \mathbf{25}34.677.1409  \mathbf{201}588  \mathbf{301}.669  \mathbf{3.5}5522 - 150.62687454.24661.780  \mathbf{238}.4261.780  \mathbf{339}.4261.780  \mathbf{339}.4
Virginia min12.7
                               27
                                       768.957.408223.012.98507432.492534.67.140520158881.6495.5522
                                                                                                                                          150.626827454.\mathbf{2}6361.78\mathbf{2}28.42
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                                       890.079.998004.515020002405.663075.430478246.0726399.733309.9500\ 3017.45400586.052011.250029.45
Washingtdn NA
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Wisconsinaxl3.8
                               33
                                       670.379.312373.882£20548389.260384.95.000596938€2.16880.2192.93.671281320.76799.220$15.48
Wisconsimin13.8
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                                       670.379.312773.882 \pm 20548389.260684.93.000596693832.16880.2192\ 93.671281320.76799.229315.48
Wisconsin 1.0
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                               32
                                       791.179.37580.6667.5833789.5863830.75.750400088337.588314.833349.66664884.0833.333365.00
Wyomingd NA
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                                       791.179.37580.6667.5833789.5863830.75.75040088537.583314.8333 49.66664884.0533.3333365.00
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                                       791.179.37580.6667.5833789.5863830.75.75040088537.583314.8333 49.66664884.0533.3333365.00
Wyoming
                                       1.00 1.0000000001.00001.00001.00
                                                                                              1.000001.000\ 1.00001.00
                                 1
```

Some more summary statistics for my variables clean_joineddata2 %>% summary(is.numeric)

state LE Deaths DriverDeaths ## Length:51 Min. :74.15 Min. : 324.6 Min. : 5.90

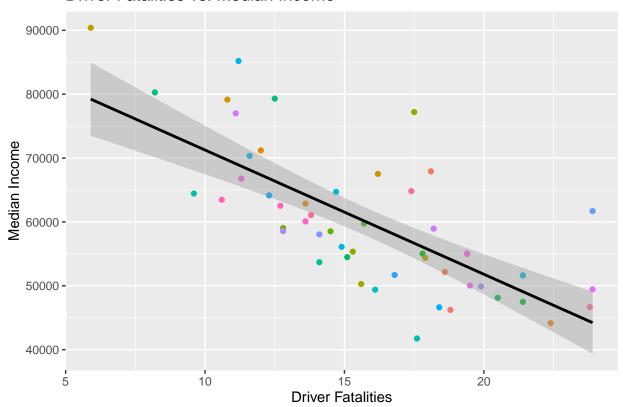
```
Class :character
                       1st Qu.:77.04
                                       1st Qu.: 1240.8
                                                          1st Qu.:12.75
   Mode :character
##
                       Median :78.42
                                       Median: 2218.4
                                                          Median :15.60
##
                       Mean
                              :78.19
                                       Mean
                                              : 3232.9
                                                          Mean
                                                                :15.79
##
                       3rd Qu.:79.40
                                       3rd Qu.: 4219.3
                                                          3rd Qu.:18.50
##
   AlcoholRelated PhysicalDistress
                                       Uninsured
                                                        HouseholdIncome
                                           : 248.1
##
   Min.
           :16.00
                    Min.
                         : 9.00
                                                        Min.
                                                               :41754
                                     Min.
                                     1st Qu.: 1030.0
   1st Qu.:28.00
                    1st Qu.:11.59
                                                        1st Qu.:51664
##
   Median :30.00
                    Median :12.99
                                     Median : 1715.5
                                                        Median :58569
##
   Mean
           :30.69
                    Mean :13.11
                                     Mean
                                           : 2690.1
                                                        Mean
                                                               :59998
##
   3rd Qu.:33.00
                    3rd Qu.:14.57
                                     3rd Qu.: 3078.1
                                                        3rd Qu.:64772
##
       Homicide
                       PercRural
                                        Premiums
                                                           Asian
          : 1.714
                                                                  345
##
   Min.
                     Min.
                            : 0.00
                                     Min.
                                            : 642.0
                                                       Min.
##
   1st Qu.: 3.125
                     1st Qu.:43.93
                                     1st Qu.: 768.4
                                                       1st Qu.:
                                                                1901
##
  Median : 5.250
                     Median :54.53
                                     Median: 859.0
                                                       Median :
                                                                 5800
         : 5.766
                                           : 887.0
                                                             : 19619
##
  Mean
                     Mean
                            :51.91
                                     Mean
                                                       Mean
##
   3rd Qu.: 7.093
                     3rd Qu.:66.29
                                     3rd Qu.:1007.9
                                                       3rd Qu.: 16595
##
   AmericanIndianAlaskaNative PacificIslander
                                                      Hispanic
          : 163.8
                               Min.
                                           18.93
                                                   Min.
                                                          : 1113
                               1st Qu.:
                                                   1st Qu.: 5556
##
   1st Qu.: 756.1
                                           94.72
##
   Median: 1760.9
                               Median :
                                         175.29
                                                   Median : 12454
##
   Mean
          : 3917.9
                               Mean
                                       : 1540.42
                                                   Mean
                                                          : 48860
   3rd Qu.: 3973.8
                               3rd Qu.: 716.53
                                                   3rd Qu.: 50897
##
##
        Black
                                            % BIPOC
                           White
                                                            Diverse
##
   Min.
          :
               202.3
                       Min.
                              : 21524
                                        Min.
                                               : 5.512
                                                          Length:51
   1st Qu.: 2847.1
                       1st Qu.: 63476
                                        1st Qu.:19.323
                                                          Class : character
  Median : 15211.2
                       Median :113526
                                        Median :27.949
                                                          Mode :character
          : 34948.7
                                              :31.110
##
  Mean
                       Mean
                              :166065
                                        Mean
   3rd Qu.: 41505.8
                       3rd Qu.:231980
                                        3rd Qu.:41.914
   [ reached getOption("max.print") -- omitted 1 row ]
clean_joineddata2 %>% group_by(state, Diverse) %>% summarize(HouseholdIncome = mean(HouseholdIncome)) %
    arrange(desc((HouseholdIncome)))
## # A tibble: 51 x 3
## # Groups:
               state [51]
##
      state
                           Diverse HouseholdIncome
##
      <chr>
                           <chr>>
                                              <dbl>
##
   1 District of Columbia high
                                             90395
##
   2 New Jersey
                                             85193.
                           low
  3 Massachusetts
                           low
                                             80279.
##
  4 Maryland
                           low
                                             79316.
## 5 Connecticut
                                             79151.
                           low
##
  6 Hawaii
                           high
                                             77203.
  7 Rhode Island
                                             77003.
                           low
##
   8 California
                                             71197.
                           high
## 9 New Hampshire
                           low
                                             70350
## 10 Alaska
                           low
                                             67924.
## # ... with 41 more rows
clean_joineddata2 <- clean_joineddata2 %>% mutate(Rural = ifelse(PercRural >
    50, "yes", "no"))
```

Your discussion of wrangling section here. Feel encouraged to break up into more than once code chunk and discuss each in turn.

```
# Plot of driver fatalities vs. median household income
clean_joineddata2 %>% ggplot(aes(x = DriverDeaths, y = HouseholdIncome)) +
    geom_point(aes(color = state)) + geom_smooth(method = "lm",
    color = 1) + scale_x_continuous(breaks = seq(0, 25, 5)) +
    scale_y_continuous(breaks = seq(0, 1e+05, 10000)) + ggtitle("Driver Fatalities vs. Median Income")
    xlab("Driver Fatalities") + ylab("Median Income") + theme(legend.position = "none")
```

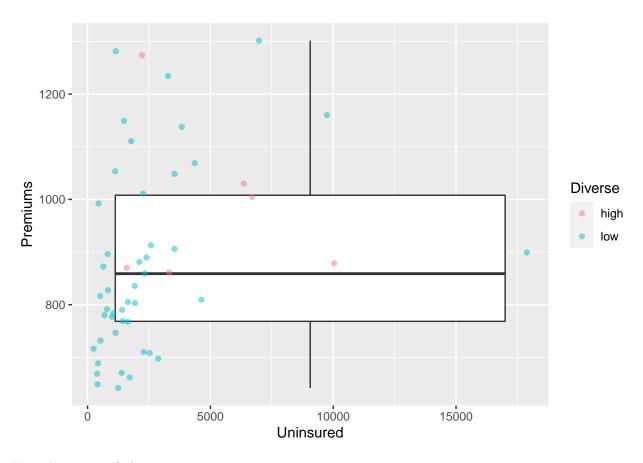
Visualizing

Driver Fatalities vs. Median Income



For the first ggplot, we're looking at the relationship between the number of drivers that have died from a car accident and median household income in each of the 50 U.S. states.

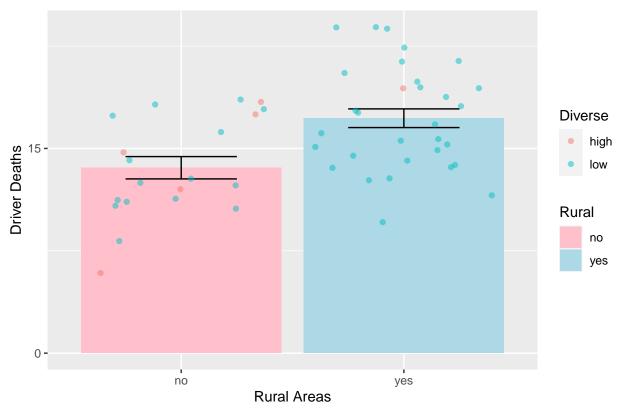
```
# Plot of driver fatalities in each state in the United
# States
clean_joineddata2 %>% ggplot(aes(x = Uninsured, y = Premiums)) +
    geom_boxplot() + geom_jitter(alpha = 0.5, aes(color = Diverse))
```



Your discussion of plot 2

```
# your plot 3
clean_joineddata2 %>% ggplot(aes(x = Rural, y = DriverDeaths)) +
    geom_bar(aes(fill = Rural), stat = "summary", fun = mean) +
    ggtitle("DriverDeaths vs. Rural Areas") + geom_errorbar(stat = "summary",
    width = 0.5) + xlab("Rural Areas") + ylab("Driver Deaths") +
    scale_fill_manual(values = c("pink", "light blue")) + scale_y_continuous(breaks = seq(0, 85, 15)) + geom_jitter(alpha = 0.5, aes(color = Diverse))
```

DriverDeaths vs. Rural Areas



Your discussion of plot 3

Concluding Remarks If any!