500 Cities Heart Health Report

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Introduction

This report analyzes the 500 Cities dataset. The 500 Cities dataset is published by the CDC and contains epidemiological data on the 500 largest cities in the United States, where the largest city in the United States is defined as having the largest population of any city in the United States. The data contains health measures that can be categorized by prevention, unhealthy behaviors, and health outcomes. The category for and the description of each measure in the 500 Cities dataset can be viewed on the 500 Cities measures page. This report explores correlations in the data, focusing on heart health measures. With these correlations, this report examines which states and regions in the United States fair well and which states and regions fair poorly on these heart health measures.

The dataset used in this report contains data from 2014 and 2015 and can be downloaded here.

Terms

Below, relevant terms to this report are defined. The definitions for these terms are provided on the 500 Cities measures page. Each of these terms can be categorized as an unhealthy behavior or a health outcome. Further, each term can be defined as the percentage of people surveyed who engage in the unhealthy behavior or have the health outcome. These percentages are calculated by determining the number of people who are a part of the population the term defines and the total number of people surveyed. The total number of people surveyed counts all people surveyed about the term who are 18 years or older and reported being or not being a part of the population the term defines. This excludes those who refused to answer, had a missing answer, or answered "don't know/not sure" to the question; additional exclusions apply to some terms. For more information on each of these terms, please view the 500 Cities measures page.

Chronic Kidney Disease: Respondents, 18 years or older, who report ever having been told by a doctor, nurse, or other health professional that they have kidney disease. The CDC categorizes this measure as a health outcome.

Chronic Obstructive Pulmonary Disease: Respondents, 18 years or older, who report ever having been told by a doctor, nurse, or other health professional that they had chronic obstructive pulmonary disease, emphysema, or chronic bronchitis. The CDC categorizes this measure as a health outcome.

Coronary Heart Disease: Respondents, 18 years or older, who report ever having been told by a doctor, nurse, or other health professional that they had angina or coronary heart disease. The CDC categorizes this measure as a health outcome.

Diabetes: Respondents, 18 years or older, who report ever having been told by a doctor, nurse, or other health professional that they have diabetes. This excludes women who were only told they had diabetes during pregnancy. The CDC categorizes this measure as a health outcome.

High Blood Pressure: Respondents, 18 years or older, who report ever having been told by a doctor, nurse, or other health professional that they have high blood pressure. This excludes women who were only told they had high blood pressure during pregnancy and those who were told they had borderline hypertension. The CDC categorizes this measure as a health outcome.

No Leisure Time Physical Activity: Respondents, 18 years or older, who answered "no" to the following question: "During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?". The CDC categorizes this measure as an unhealthy behavior.

Obesity: Respondents, 18 years or older, who have a BMI of greater or equal to 30.0. This BMI is calculated from respondents' self-reported height and weight. This excludes pregnant women, and those with less typical height measurements, weight measurements, and BMI calculations. The CDC categorizes this measure as an unhealthy behavior; this report, however, categorizes this measure as a health outcome.

Poor Mental Health: Respondents, 18 years or older, who report poor mental health in at least 14 of the past 30 days. The CDC categorizes this measure as a health outcome.

Poor Physical Health: Respondents, 18 years or older, who report poor physical health in at least 14 of the past 30 days. The CDC categorizes this measure as a health outcome.

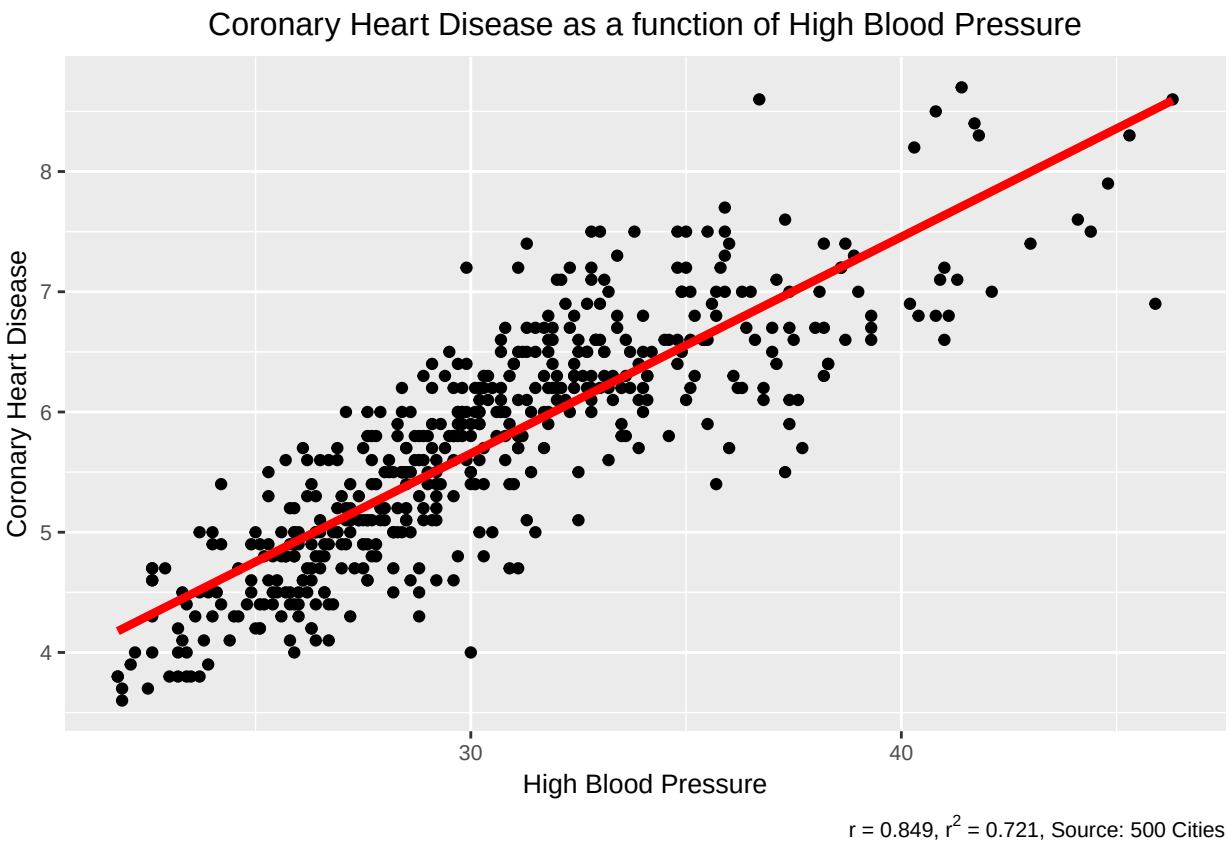
Smoking: Respondents, 18 years or older, who report having smoked at least 100 cigarettes in their lifetime and smoke every or some days. The CDC categorizes this measure as an unhealthy behavior.

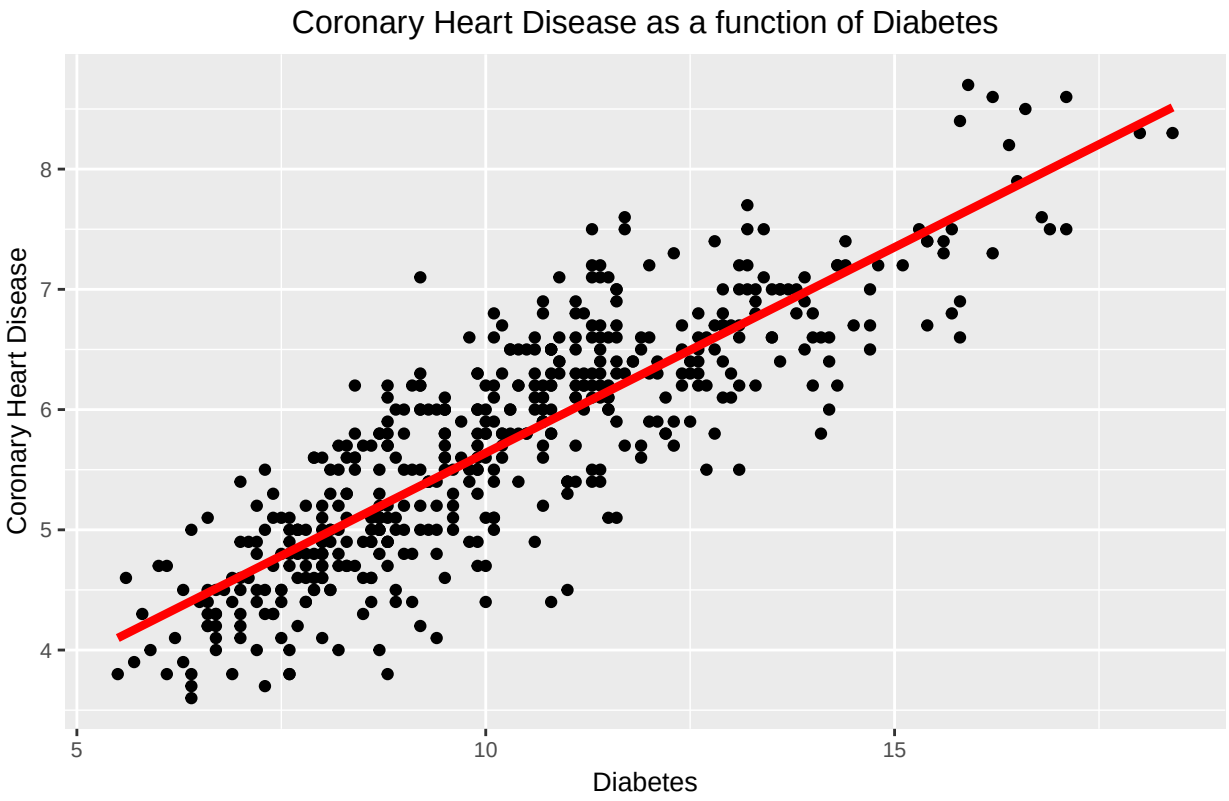
Stroke: Respondents, 18 years or older, who report ever having been told by a doctor, nurse, or other health professional that they have had a stroke. The CDC categorizes this measure as a health outcome.

Correlation Analysis - *Possible* Coronary Heart Disease Indicators

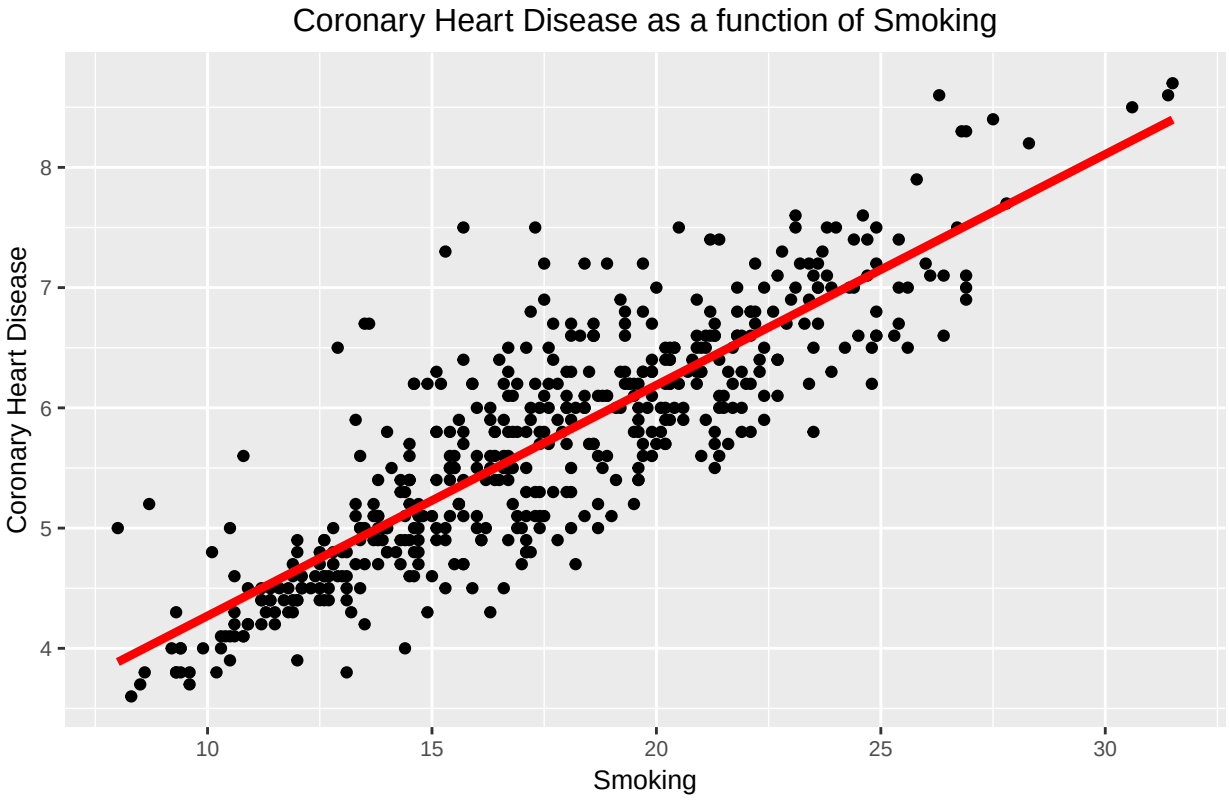
Description

Examine which measures, in the dataset, strongly correlate with Coronary Heart Disease. The correlations are calculated using the Pearson Product-Moment Correlation. Correlations are included if the correlation is between Coronary Heart Disease and another measure in the dataset and if the magnitude of the correlation coefficient is greater or equal to 0.80. Each of these strong correlations is graphed as a scatter plot, with Coronary Heart Disease on the y-axis and the other relevant measure on the x-axis. For each scatter plot, each mark represents one of the 500 cities from the 500 Cities dataset, with each plot fitted with a linear regression line. The graphs are sorted from smallest to largest correlation coefficient.

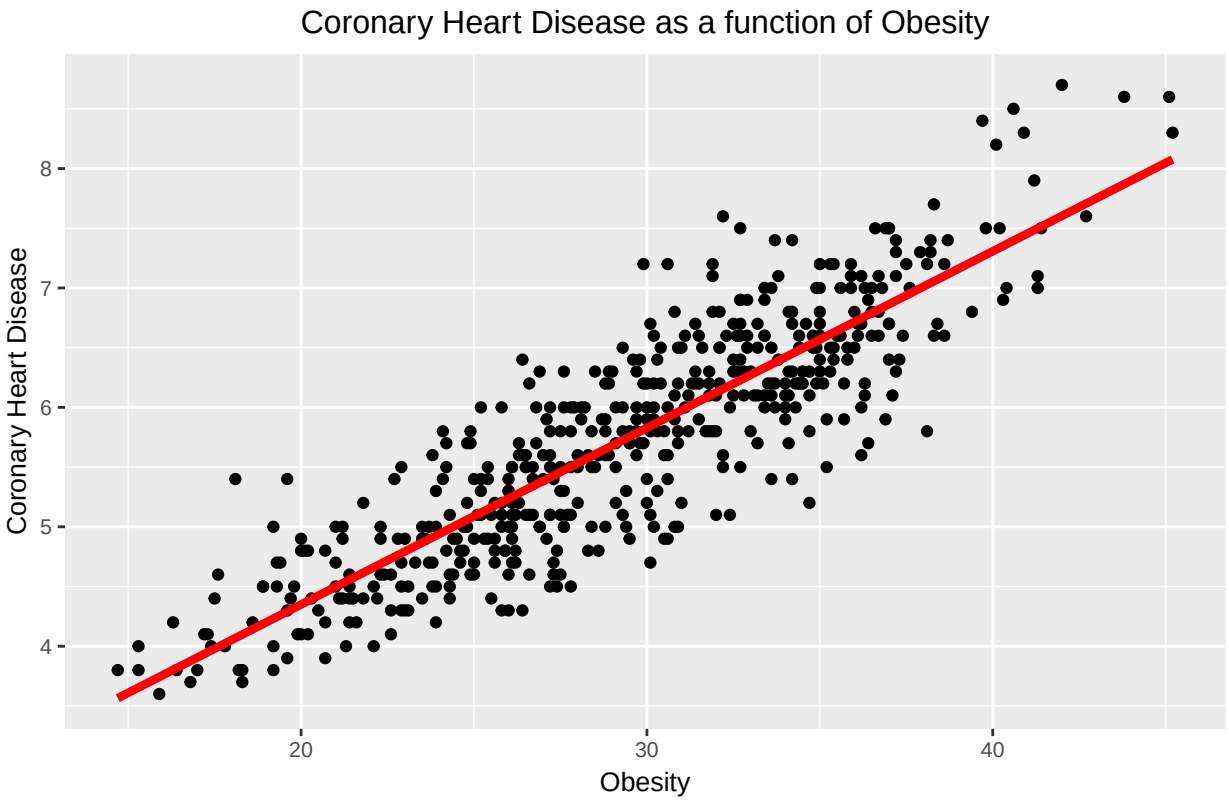




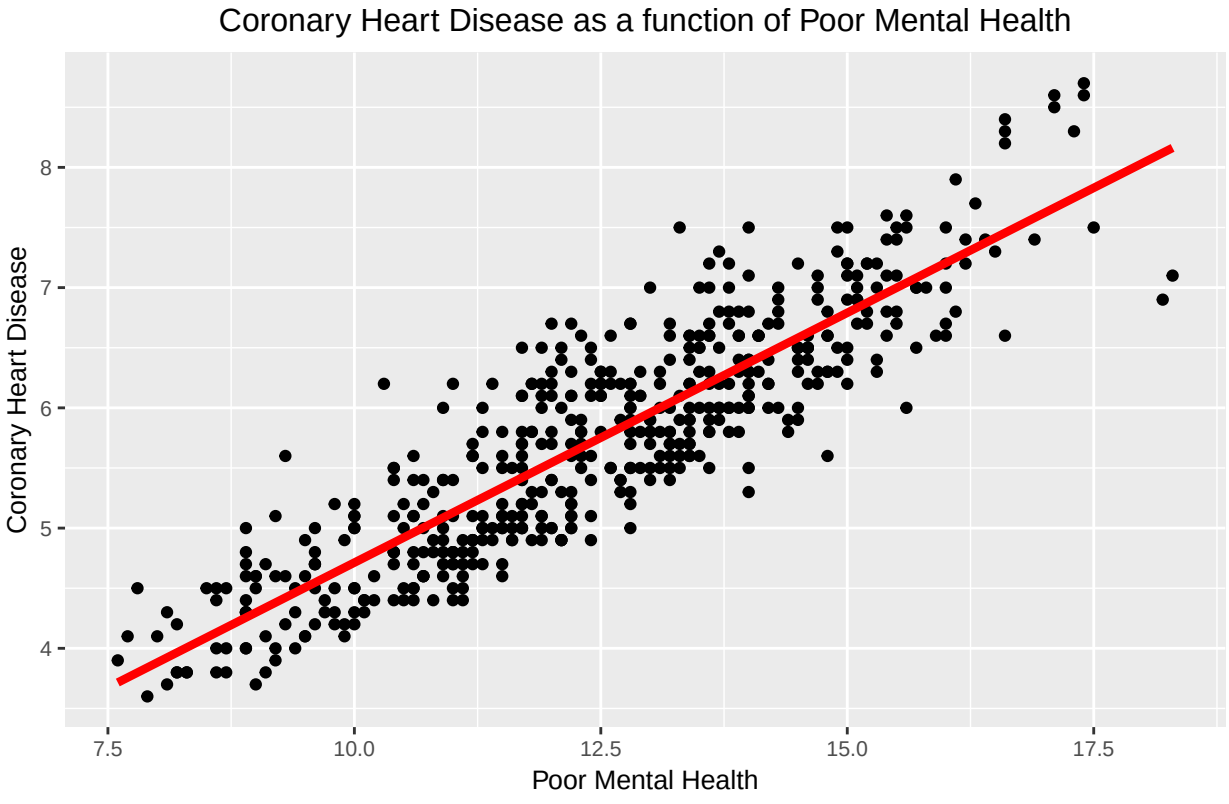
r = 0.85, r^2 = 0.723, Source: 500 Cities



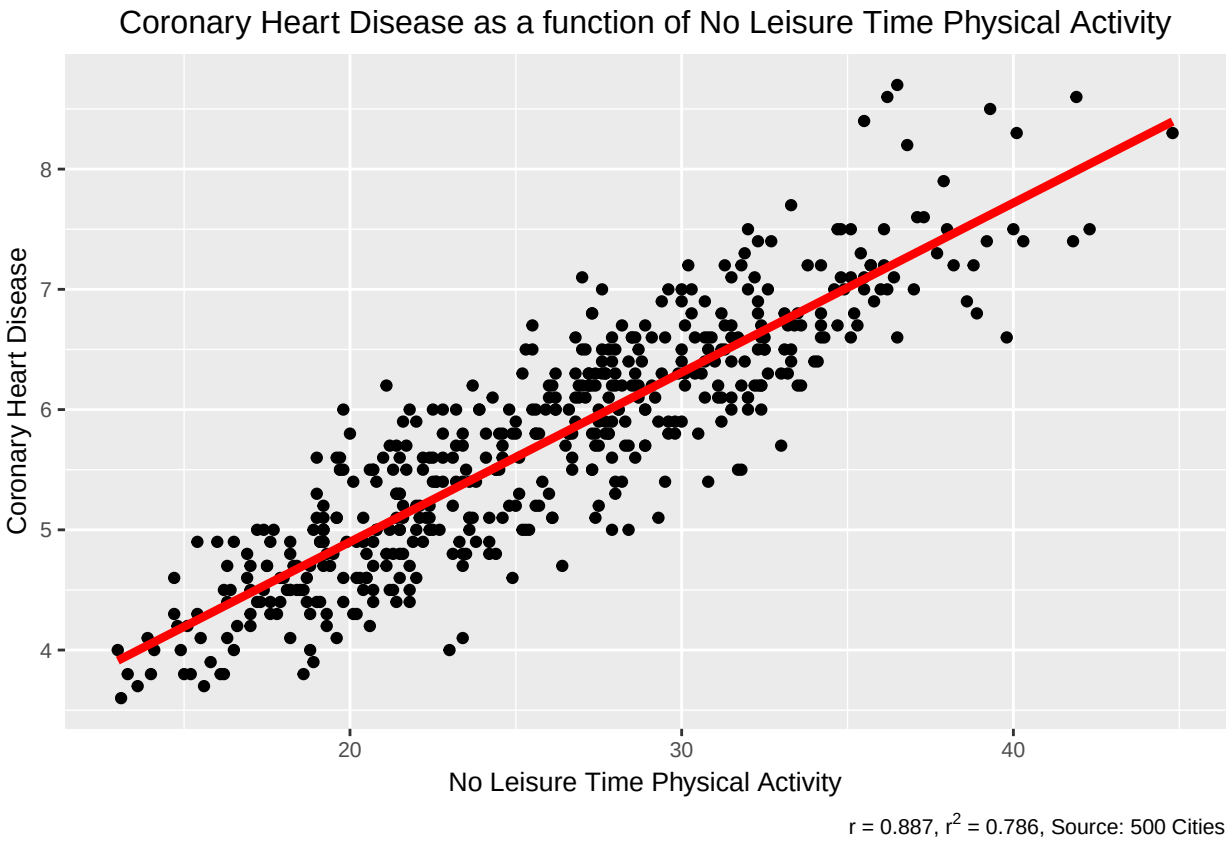
r = 0.854, r^2 = 0.73, Source: 500 Cities



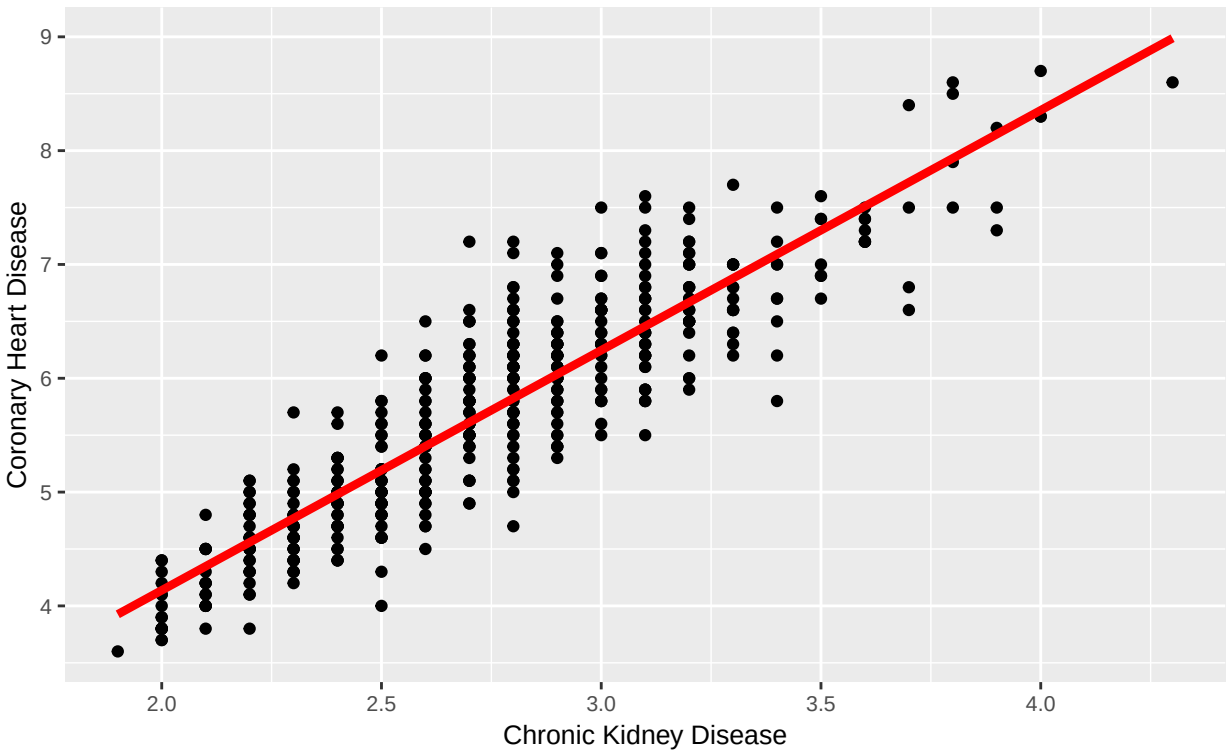
r = 0.873, r^2 = 0.762, Source: 500 Cities



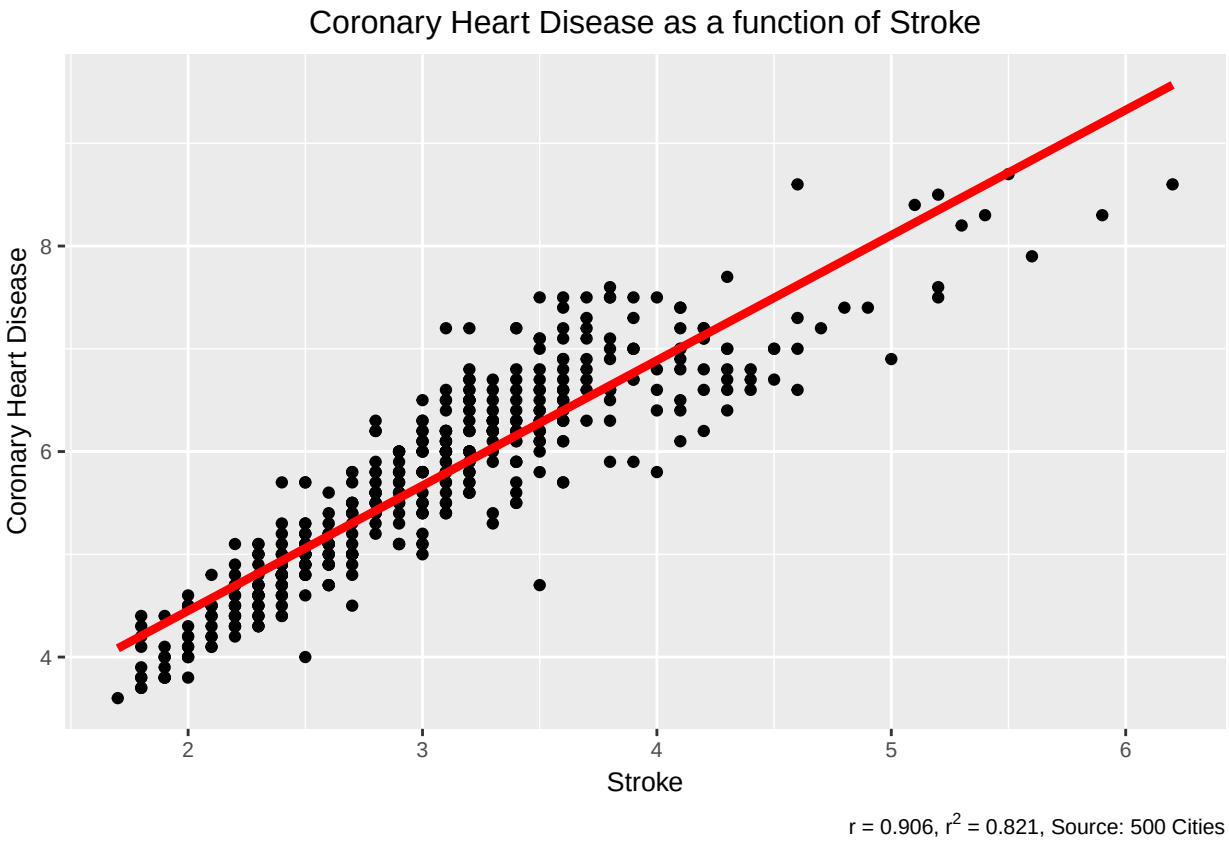
r = 0.886, r^2 = 0.785, Source: 500 Cities



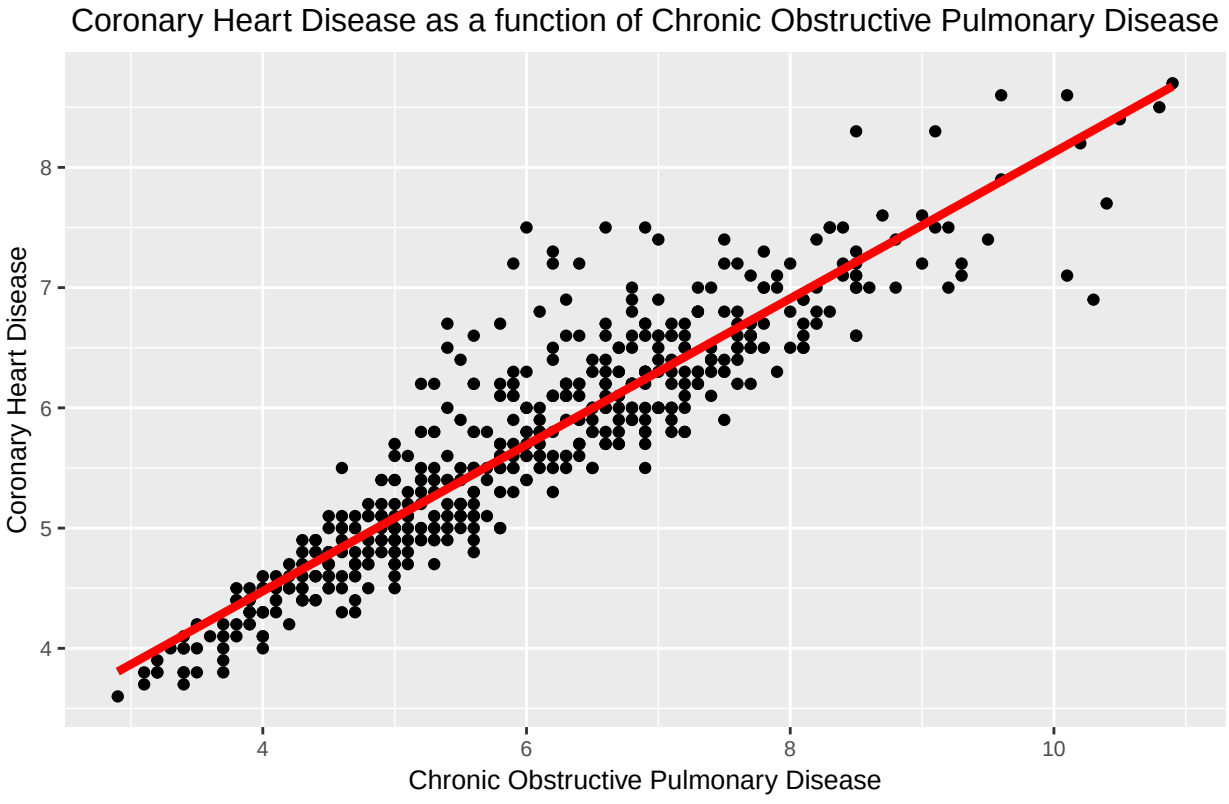
r = 0.887, r^2 = 0.786, Source: 500 Cities



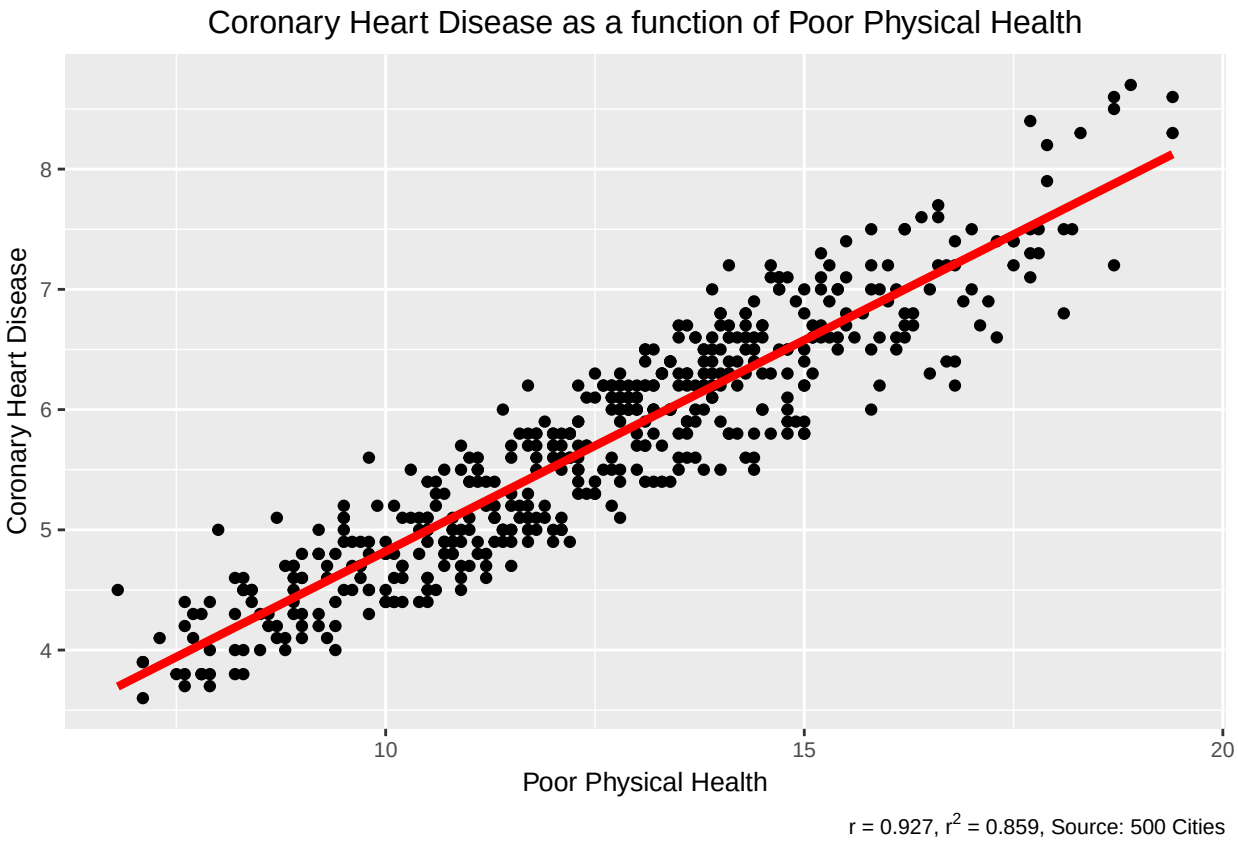
r = 0.896, r^2 = 0.803, Source: 500 Cities



r = 0.906, r^2 = 0.821, Source: 500 Cities



r = 0.919, r^2 = 0.844, Source: 500 Cities



Analysis

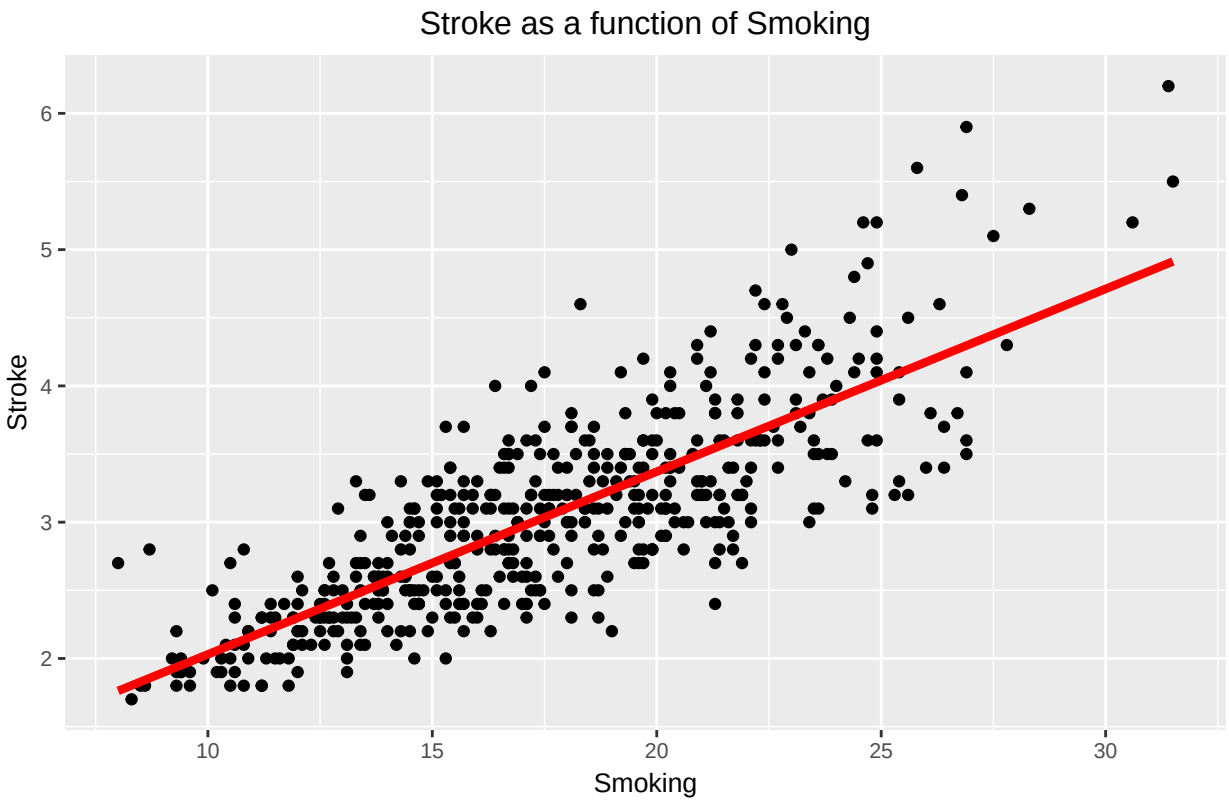
Correlations between Coronary Heart Disease and High Blood Pressure, Diabetes, Smoking, Obesity, Poor Mental Health, No Leisure Time Physical Activity, Chronic Kidney Disease, Stroke, Chronic Obstructive Pulmonary Disease, and Poor Physical Health are seen above. All of these variables strongly correlate with Coronary Heart Disease and can serve as *possible* indicators of Coronary Heart Disease. Moreover, the number and diversity of variables listed *suggest* that good heart health can be viewed as general well-being. For the remainder of this report, all variables listed here, that strongly correlate with Coronary Heart Disease, will be denoted as "*Possible* Coronary Heart Disease Indicators".

Each of these correlations' r squared values is at least 0.721 (High Blood Pressure) and at most 0.859 (Poor Physical Health). This indicates that at least 72.1% and at most 85.9% of the variance in Coronary Heart Disease is explained by each of these variables, respectively. This, also, means that at most 27.9% and at least 14.1% of the variance in Coronary Heart Disease is not explained by each of these variables, respectively. This allows us to conclude that there are a lot of variables that correlate with Coronary Heart Disease; variables like High Blood Pressure, Diabetes, Smoking, Obesity, Poor Mental Health, No Leisure Time Physical Activity, Chronic Kidney Disease, Stroke, Chronic Obstructive Pulmonary Disease, and Poor Physical Health strongly correlate with Coronary Heart Disease, but there are *possibly* other variables that correlate with Coronary Heart Disease, as well.

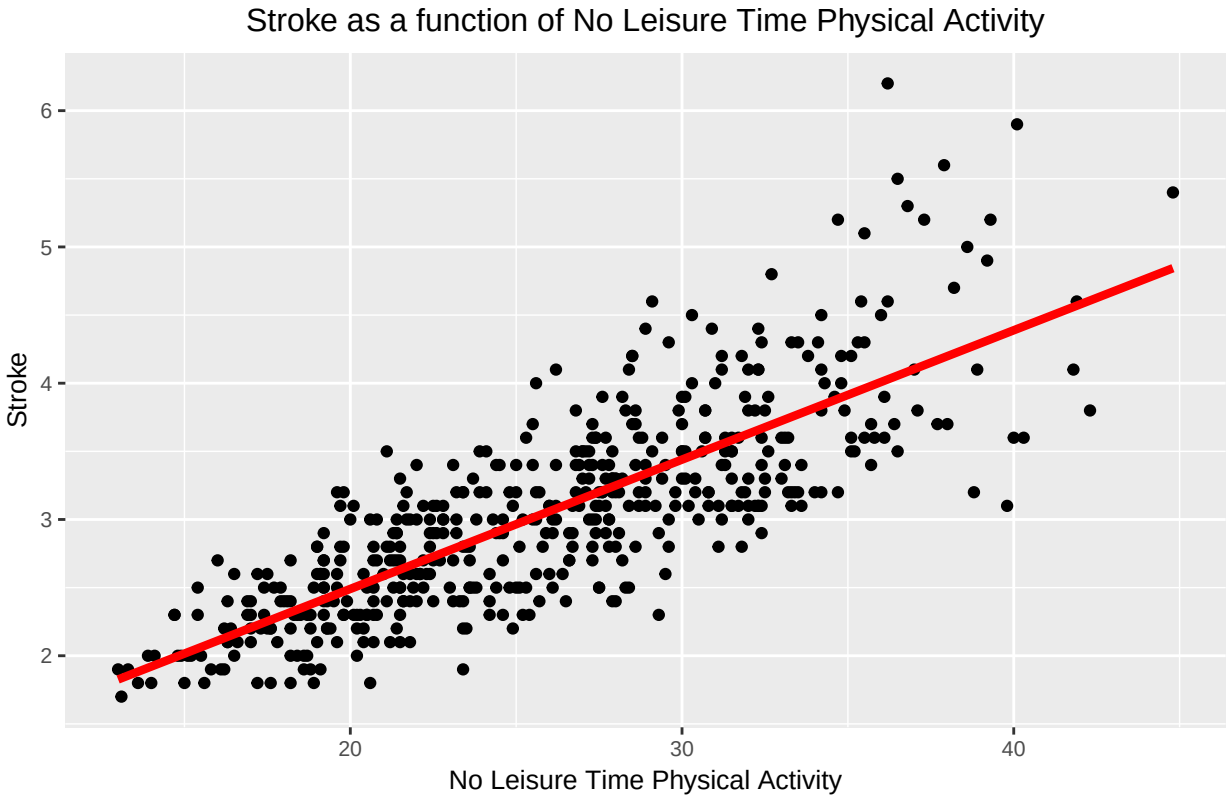
Correlation Analysis - *Possible* Coronary Heart Disease Indicators, Unhealthy Behaviors and Health Outcomes

Description

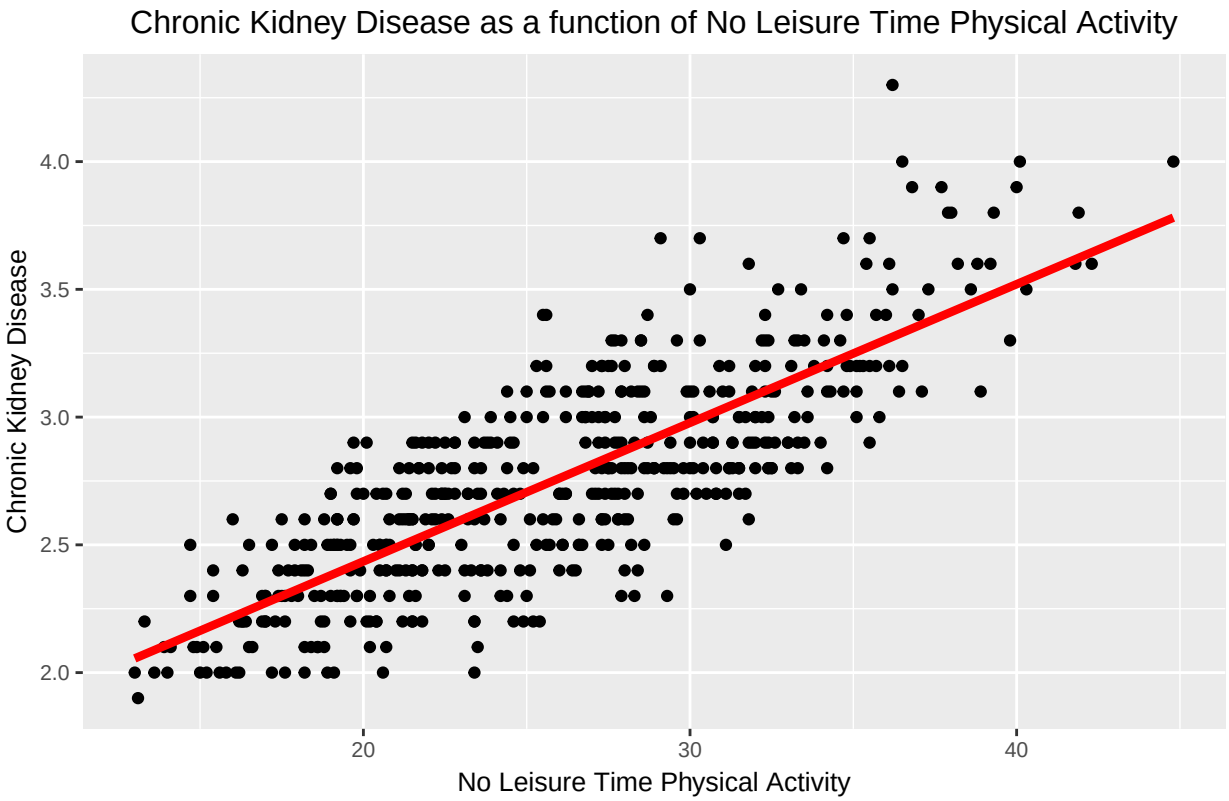
Examine strong correlations between the *Possible* Coronary Heart Disease Indicators, where one variable is categorized as an unhealthy behavior and the other variable is categorized as a health outcome. Again, the correlations are calculated using the Pearson Product-Moment Correlation. Correlations are included if both variables are *Possible* Coronary Heart Disease Indicators, one variable is categorized as an unhealthy behavior, one variable is categorized as a health outcome, and the magnitude of the correlation coefficient is greater or equal to 0.80. Each of these strong correlations is graphed as a scatter plot, with the health outcome on the y-axis and the unhealthy behavior on the x-axis. For each scatter plot, each mark represents one of the 500 cities from the 500 Cities dataset, with each plot fitted with a linear regression line. The graphs are sorted from smallest to largest correlation coefficient.



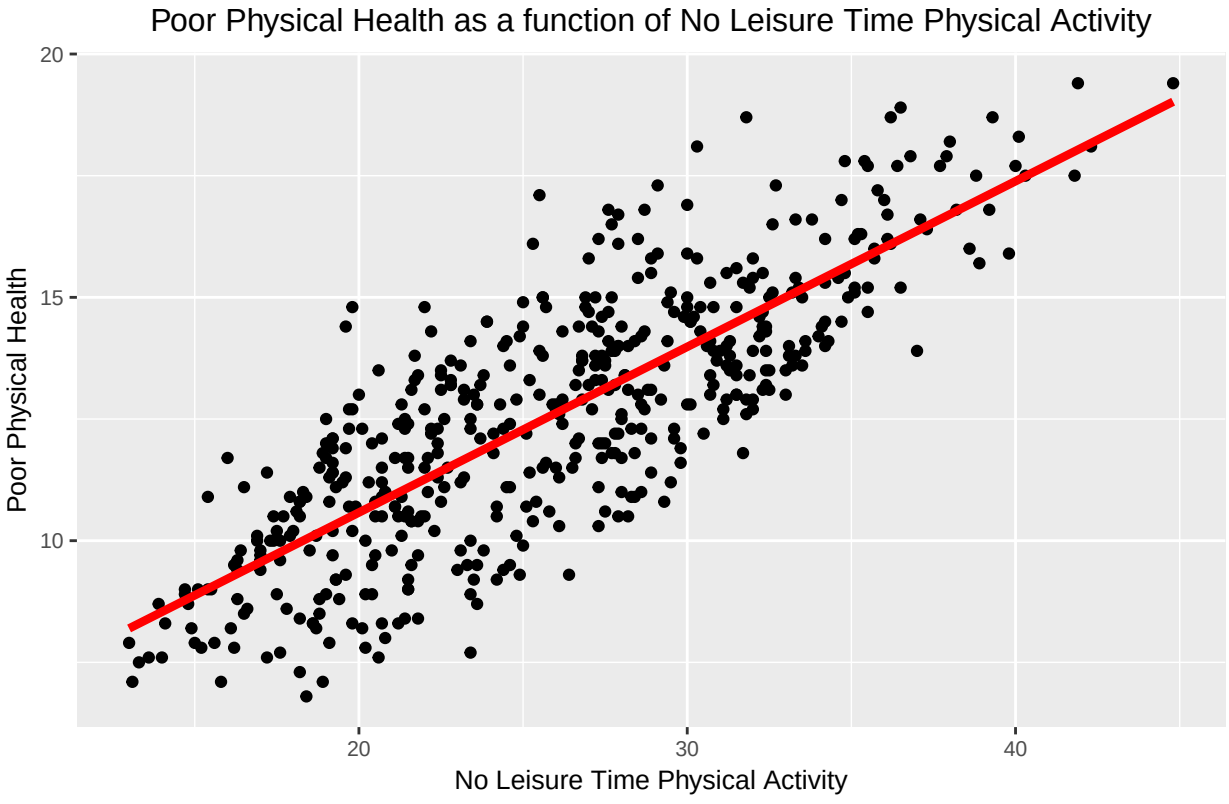
r = 0.802, r^2 = 0.644, Source: 500 Cities



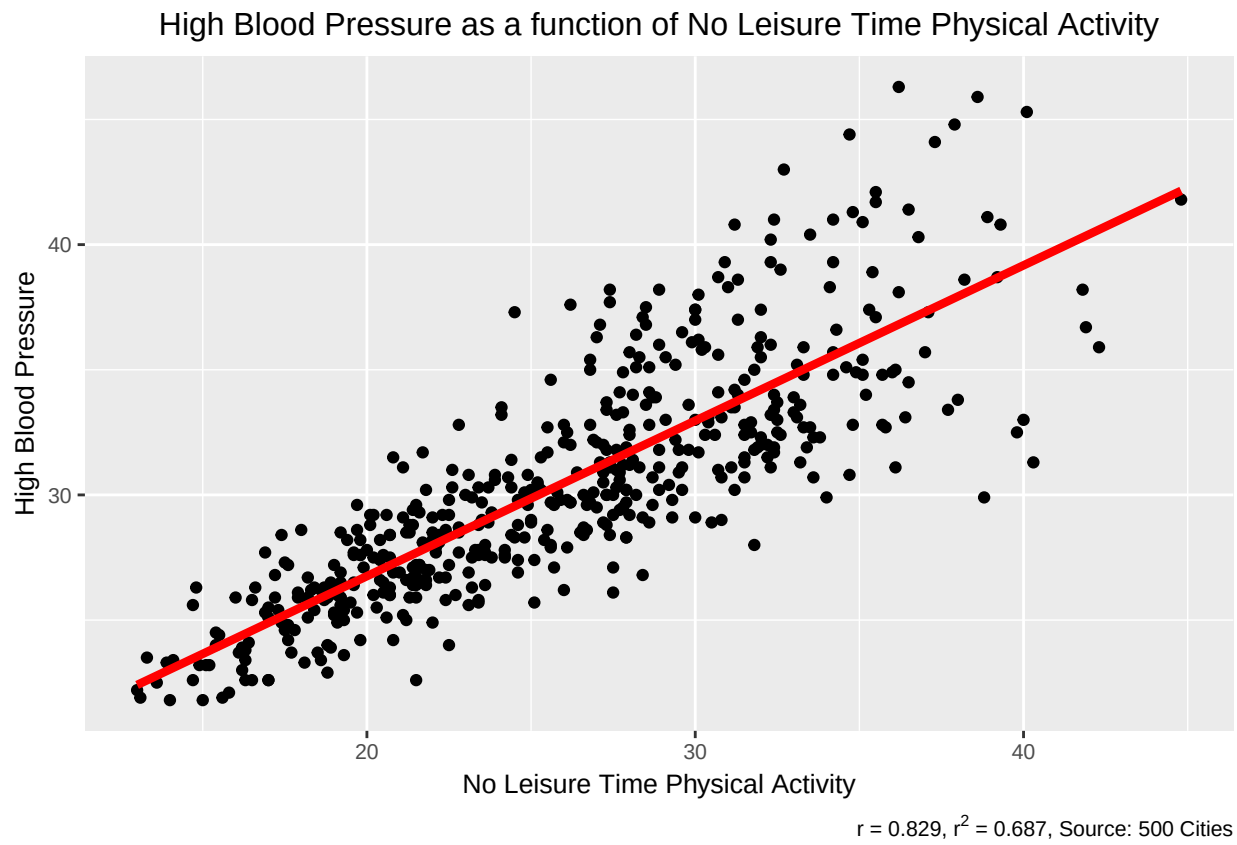
r = 0.803, r^2 = 0.644, Source: 500 Cities

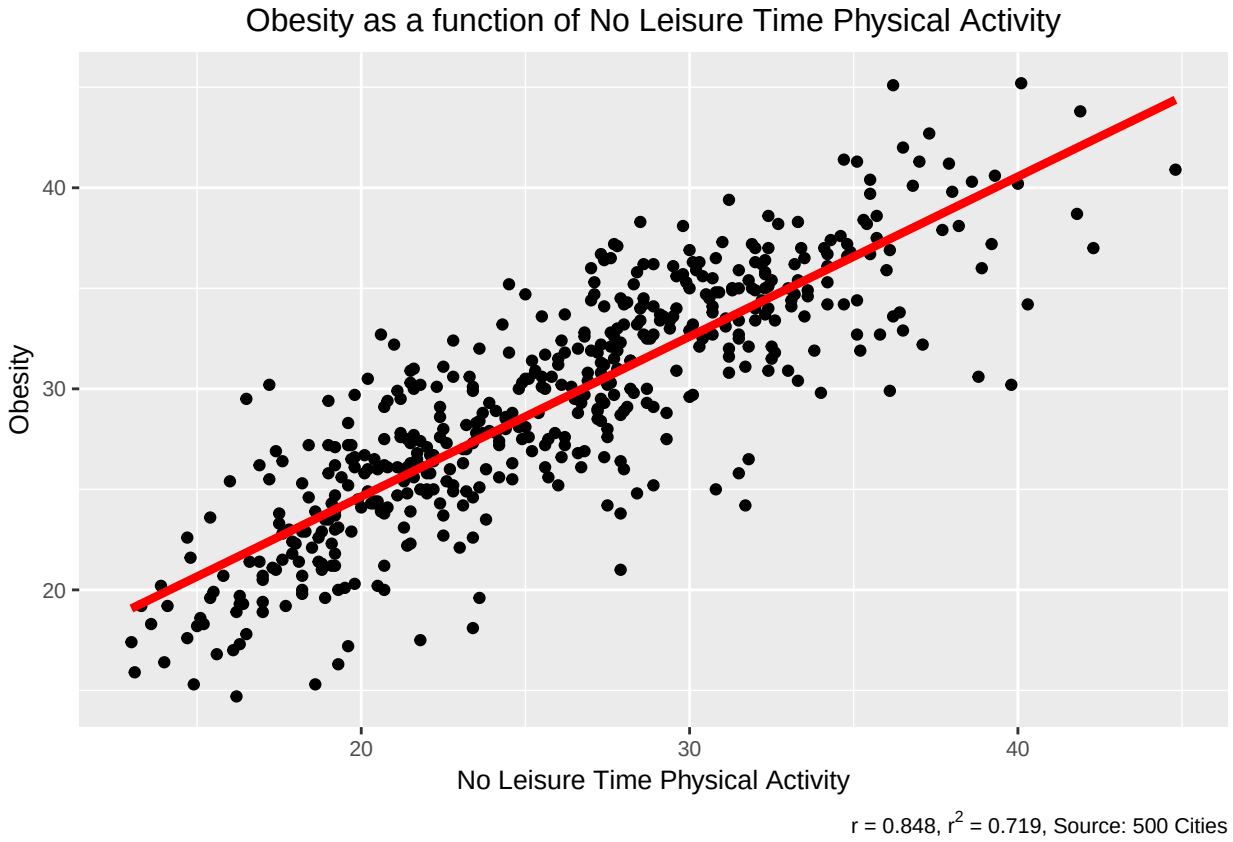


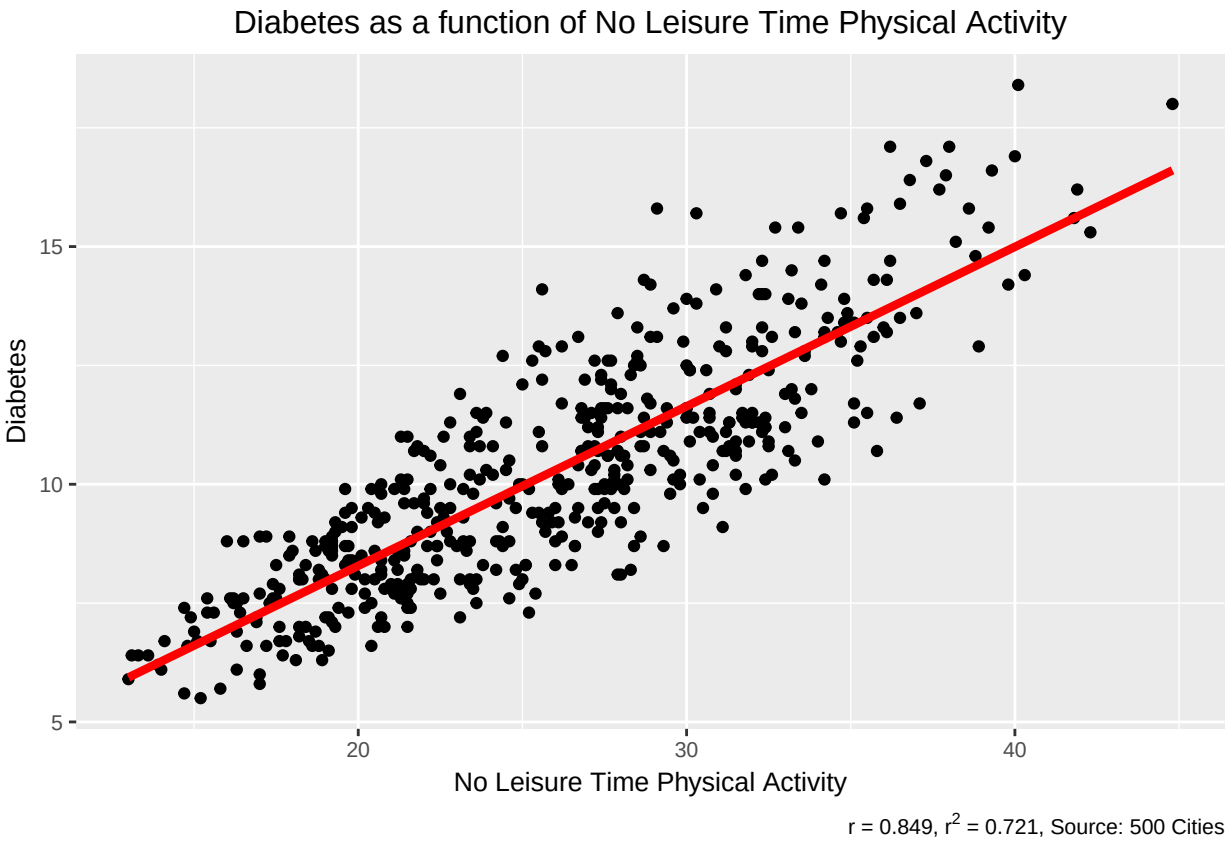
r = 0.803, r^2 = 0.645, Source: 500 Cities

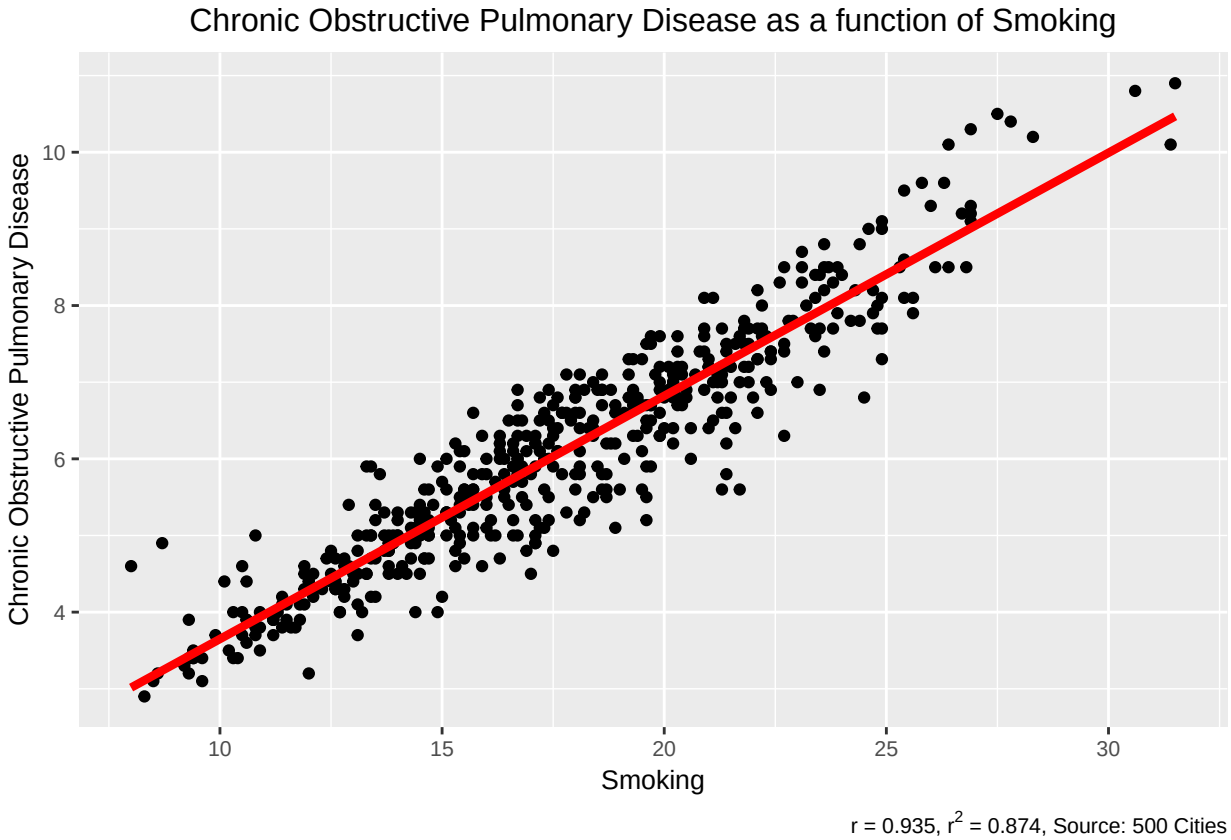


r = 0.812, r^2 = 0.659, Source: 500 Cities


High Blood Pressure as a function of No Leisure Time Physical Activity
High Blood Pressure
40
30
20
30
40
No Leisure Time Physical Activity
r = 0.829, r2 = 0.687, Source: 500 Cities


Obesity as a function of No Leisure Time Physical Activity
Obesity
40
30
20
20
30
40
No Leisure Time Physical Activity
r = 0.848, r2 = 0.719, Source: 500 Cities





Analysis

Above are strong correlations between Stroke and Smoking, Stroke and No Leisure Time Physical Activity, Chronic Kidney Disease and No Leisure Time Physical Activity, Poor Physical Health and No Leisure Time Physical Activity, High Blood Pressure

and No Leisure Time Physical Activity, Obesity and No Leisure Time Physical Activity, Diabetes and No Leisure Time Physical Activity, and Chronic Obstructive Pulmonary Disease and Smoking. In examining correlations between *Possible* Coronary Heart Disease Indicators that are categorized as unhealthy behaviors (No Leisure Time Physical Activity and Smoking) and *Possible* Coronary Heart Disease Indicators that are categorized as health outcomes (Stroke, Chronic Kidney Disease, Poor Physical Health, High Blood Pressure, Obesity, Diabetes, and Chronic Obstructive Pulmonary Disease), there are multiple *possible* explanations for these relationships. Firstly, it is *possible* that the unhealthy behavior is increasing the likelihood of the health outcome. Secondly, it is *possible* that having the health outcome increases the likelihood that an individual will engage in the unhealthy behavior. Thirdly, it is *possible* that people who experience the health outcome engage in the unhealthy behavior, but other factors influence the likelihood of experiencing the health outcome. Regardless if the unhealthy behaviors are *causing* the health outcomes, it seems worthwhile for people to lessen their engagement in these unhealthy behaviors (i.e. increase time spent participating in leisurely physical activities and smoke less). After all, these behaviors are unhealthy, and there is the *possibility* that engaging in these unhealthy behaviors less will decrease people's chances of experiencing the health outcomes and increase their chances of having better heart health.

State/Region Heart Health Analysis

Description

Rank each state, from best to worst, on its performance in Coronary Heart Disease and the *Possible* Coronary Heart Disease Indicators listed above: High Blood Pressure, Diabetes, Smoking, Obesity, Poor Mental Health, No Leisure Time Physical Activity, Chronic Kidney Disease, Stroke, Chronic Obstructive Pulmonary Disease, and Poor Physical Health. The table is organized below such that each measure has a ranking column (names ending in "Ranking"). Each measure's ranking column ranks each state, from 1 to 50, from smallest to largest percentage value; the percentage value corresponds to the percentage of people, in each state, that engage in the unhealthy behavior or have the health outcome the measure defines.

Each state's rankings for its 11 measures are summed to yield a total heart heart health score. With this total heart health score, each state is ranked, from 1 to 50, from smallest to largest score, to yield a state heart health ranking. States are sorted, from best to worst state heart health ranking, in the table below. Further, the number of cities from which data was collected in the state is included, as the 500 largest cities in the United States are not evenly distributed across all 50 states. Following the table, the state heart health ranking is visualized on a map of the United States; Alaska and Hawaii are excluded from this map. Additionally, the same process is carried out for the regions of the United States. The regions include Northeast, Southeast, Midwest, West, and Southwest.

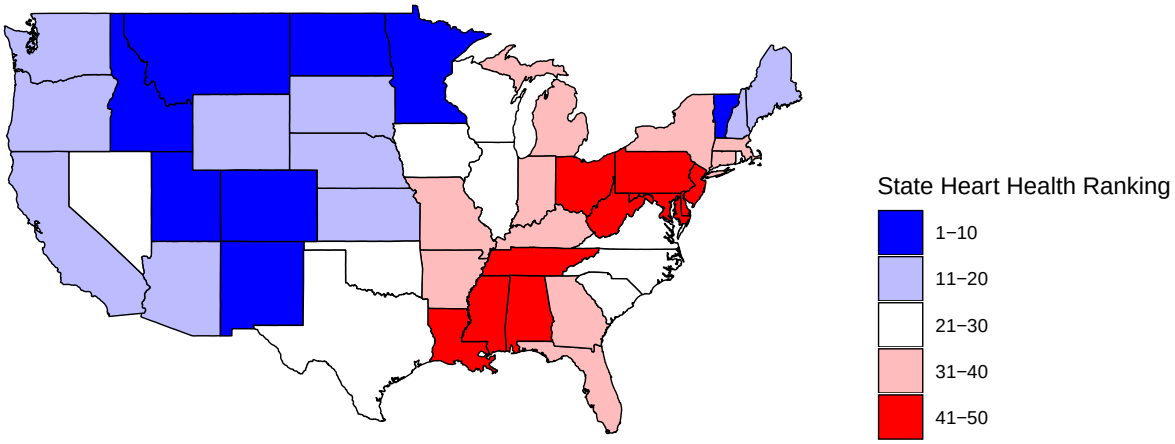
Lastly, to see each state's and each region's percentages for each measure, please see "Table 3: State Heart Health Ranking - Values" and "Table 4: Region Heart Health Ranking - Values", at the end of this report on page 17 and 18. These tables are organized such that each measure has a value column (names ending in "Value"). Each measure's value column corresponds to the percentage of people, in each state and region, that engage in the unhealthy behavior or have the health outcome the measure defines.

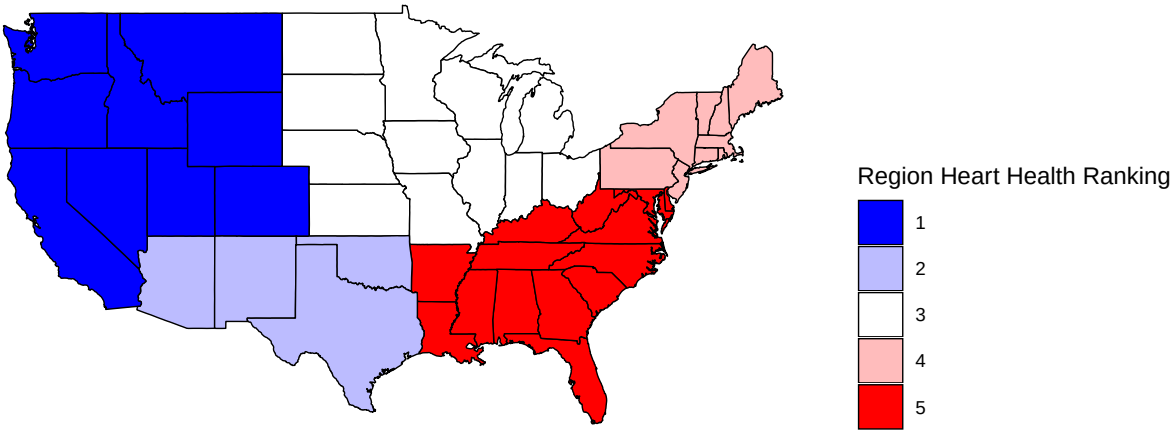
Table 1: State Heart Health Ranking

State_Heart_Health_Ranking	State_Name	Region	Num_Cities	Coronary_Heart_Disease_Ranking	High_Blood_Pressure_Ranking	Diabetes_Ranking	Smoking_Ranking	Obesity_Ranking	Poor_Mental_Health_Ranking	No_Leisure_Time_Physical_Activity_Ranking	Chronic_Kidney_Disease_Ranking	Stroke_Ranking	Chronic_Obstructive_Pulmonary_Disease_Ranking	Poor_Physical_Health_Ranking	Total_Score
1	Colorado	WEST	14	2	1	1	7	1	8	2	5	4	6	7	44
2	Minnesota	MIDWEST	7	3	2	5	10	6	3	1	9	1	5	4	50
3	Hawaii	WEST	1	1	21	15	3	2	1	14	7	2	1	2	69
4	North Dakota	MIDWEST	1	5	12	4	15	29	2	16	3	3	7	1	97
5	Alaska	WEST	1	4	20	6	14	21	7	12	2	7	4	5	102
6	Vermont	NORTHEAST	1	16	3	3	11	3	15	3	15	12	16	8	105
7	Montana	WEST	2	11	4	2	26	5	10	11	6	10	12	12	109
8	Utah	WEST	9	8	6	12	1	9	16	13	23	16	3	14	121
9	New Mexico	SOUTHWEST	4	7	5	18	8	7	17	6	26	6	9	22	131
10	Idaho	WEST	3	13	18	9	4	18	14	7	8	15	11	16	133
11	California	WEST	121	6	9	25	2	4	22	10	18	13	5	21	135
12	Maine	NORTHEAST	1	15	16	8	12	11	18	5	9	9	26	10	139
13	Nebraska	MIDWEST	2	9	11	11	25	27	5	19	10	17	10	3	147
14	South Dakota	MIDWEST	2	27	13	7	32	25	4	8	12	11	8	9	156
15	Oregon	WEST	8	10	7	17	16	15	33	1	16	18	13	25	171
16	Arizona	SOUTHWEST	12	12	10	20	5	10	19	15	32	14	19	19	175
17	Washington	WEST	14	14	15	13	9	12	24	4	30	21	21	20	183
18	New Hampshire	NORTHEAST	2	18	14	14	19	14	25	24	11	8	32	13	192
19	Wyoming	WEST	1	23	17	10	39	19	9	25	4	1	29	17	193
20	Kansas	MIDWEST	6	20	23	22	18	39	6	23	19	23	17	6	216
21	Illinois	MIDWEST	18	21	24	26	13	26	12	26	17	22	14	15	216
22	Iowa	MIDWEST	6	17	19	19	29	38	13	29	13	19	20	11	227
23	Wisconsin	MIDWEST	7	24	22	16	31	32	20	17	20	26	15	23	246
24	Nevada	WEST	5	25	8	21	27	8	30	20	28	24	33	31	255
25	Texas	SOUTHWEST	47	28	27	40	6	33	11	36	38	27	18	27	291
26	South Carolina	SOUTHEAST	5	22	37	31	17	22	31	18	29	39	22	24	292
27	Rhode Island	NORTHEAST	4	26	30	23	20	17	41	37	22	20	30	39	305
28	North Carolina	SOUTHEAST	14	31	36	28	23	20	23	22	33	36	25	29	306
29	Virginia	SOUTHEAST	11	19	38	38	28	35	21	28	27	37	23	18	312
30	Oklahoma	SOUTHWEST	6	37	33	24	34	28	27	40	14	25	28	26	316
31	Florida	SOUTHEAST	33	32	26	32	21	16	36	30	34	30	27	34	318
32	Connecticut	NORTHEAST	8	29	29	36	22	24	38	32	35	34	24	36	339
33	Massachusetts	NORTHEAST	13	30	25	30	30	13	43	39	31	28	37	33	339
34	Missouri	MIDWEST	8	33	28	29	42	37	32	27	21	31	38	32	350
35	Michigan	MIDWEST	16	36	32	27	41	30	28	21	37	33	40	28	353
36	Georgia	SOUTHEAST	11	35	44	41	24	36	26	31	43	43	35	30	388
37	New York	NORTHEAST	9	34	31	37	33	23	39	43	40	40	34	41	395
38	Indiana	MIDWEST	11	39	34	35	37	41	34	33	36	38	41	35	403
39	Kentucky	SOUTHEAST	2	45	43	34	46	34	29	34	24	32	49	37	407
40	Arkansas	SOUTHEAST	5	47	39	33	40	31	37	46	39	35	42	44	433
41	West Virginia	SOUTHEAST	1	49	41	39	47	45	45	35	25	29	48	46	449
42	Alabama	SOUTHEAST	6	41	47	44	36	47	40	42	41	44	45	40	467
43	New Jersey	NORTHEAST	9	44	40	48	35	40	44	49	49	45	31	49	474
44	Tennessee	SOUTHEAST	6	42	45	43	44	42	48	38	42	41	47	47	479
45	Maryland	SOUTHEAST	1	40	49	47	49	43	35	41	46	49	44	38	481
46	Pennsylvania	NORTHEAST	7	48	35	42	45	44	46	45	44	42	46	45	482
47	Louisiana	SOUTHEAST	6	43	48	45	38	49	47	47	45	46	36	43	487
48	Delaware	SOUTHEAST	1	38	46	49	43	48	42	48	47	47	43	42	493
49	Ohio	MIDWEST	9	50	42	46	50	46	50	44	50	48	50	48	524
50	Mississippi	SOUTHEAST	2	46	50	50	48	50	49	50	48	50	39	50	530

Table 2: Region Heart Health Ranking

Region_Heart_Health_Ranking	Region	Num_States	Coronary_Heart_Disease_Ranking	High_Blood_Pressure_Ranking	Diabetes_Ranking	Smoking_Ranking	Obesity_Ranking	Poor_Mental_Health_Ranking	No_Leisure_Time_Physical_Activity_Ranking	Chronic_Kidney_Disease_Ranking	Stroke_Ranking	Chronic_Obstructive_Pulmonary_Disease_Ranking	Poor_Physical_Health_Ranking	Total_Score
1	WEST	11	1	1	1	1	1	1	1	1	1	1	1	11
2	SOUTHWEST	4	2	2	3	2	2	3	3	3	2	2	3	27
3	MIDWEST	12	3	3	2	4	4	2	2	2	3	3	2	30
4	NORTHEAST	9	4	4	4	3	3	4	4	4	4	4	4	42
5	SOUTHEAST	14	5	5	5	5	5	5	5	5	5	5	5	55





Analysis

At the state level, it appears that many West states in the United States rank well, and a lot of Southeast states in the United States rank poorly, in terms of heart health. This appearance is confirmed at the region level, with the West region ranking first and the Southeast region ranking last. In fact, the West region ranks first in every measure considered, and the Southeast region ranks last in every measure considered.

There are many *possible* explanations for the geographical differences in heart health across the United States. Factors to consider are biology, behavior, and environment. In considering biology, it is *possible* for individuals in certain states and regions to have genetic information that promotes good heart health and for individuals in certain states and regions to have genetic information that inhibits good heart health. In considering behavior, as illustrated above, Smoking and No Leisure Time Physical Activity strongly correlate with Coronary Heart Disease and other *Possible* Coronary Heart Disease Indicators. There is plenty of research on the dangers of smoking and research to support the idea that leisurely and physical activities promote good heart health. Other behavior *could*, also, affect heart health. For example, maintaining strong social bonds and a healthy diet *could* promote good heart health, as well. In considering environment, it is *possible* that certain areas, in the United States, are conducive to good heart health. State healthcare policies and the number of parks and green spaces, in the area, *could* play a significant role in promoting good heart health. Finally, there are *most likely* multiple factors that contribute to the geographical differences in heart health across the United States. Biology, behavior, and environment, each, *could possibly* play a role in the geographical differences. More data on each of these three factors, Coronary Heart Disease, and the *Possible* Coronary Heart Disease Indicators would be needed to investigate these *possible* explanations for the geographical differences.

Conclusion

This report explores correlations in the 500 Cities dataset, focusing on heart health. The variables that strongly correlate with Coronary Heart Disease are High Blood Pressure, Diabetes, Smoking, Obesity, Poor Mental Health, No Leisure Time Physical Activity, Chronic Kidney Disease, Stroke, Chronic Obstructive Pulmonary Disease, and Poor Physical Health. The number and diversity of variables listed *suggest* that good heart health can be viewed as general well-being. With these correlations, doctors can use these variables as *possible* indicators of Coronary Heart Disease.

There seems to be many variables that strongly correlate with Coronary Heart Disease; many are listed above; however, there are *most likely* many other variables that strongly correlate with Coronary Heart Disease, as well. With these correlations, this report examines which states and regions in the United States fair well and poorly on Coronary Heart Disease and the *Possible* Coronary Heart Disease Indicators. The West region fairs well, and the Southeast region fairs poorly. *Possible* explanations for these geographical differences include biology, behavior, and environment. More data on Coronary Heart Disease, the *Possible* Coronary Heart Disease Indicators, and people's biology, behavior, and environment is needed to explore these relationships. However, it is worth noting the strong correlations between Coronary Heart Disease and No Leisure Time Physical Activity and between Coronary Heart Disease and Smoking. No Leisure Time Physical Activity and Smoking, also, strongly correlate with some of the other *Possible* Coronary Heart Disease Indicators. No Leisure Time Physical Activity and Smoking are the only two variables, of the *Possible* Coronary Heart Disease Indicators, that are categorized as unhealthy behaviors. These behaviors can be changed; it is easy for people to add more leisurely and physical activities to their schedules, and it is definitely *possible* for people to quit smoking or, at least, smoke less often. Lessening these two unhealthy behaviors *could possibly* improve people's heart health and decrease the likelihood of people developing Coronary Heart Disease.

References

- The 500 Cities dataset
- ggthemes
- R color cheatsheet
- *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data* by Hadley Wickham and Garrett Grolemund
- Stack Overflow

Table 3: State Heart Health Ranking - Values

State_Heart_Health_Ranking	State_Name	Region	Num_Cities	Coronary_Heart_Disease_Value	High_Blood_Pressure_Value	Diabetes_Value	Smoking_Value	Obesity_Value	Poor_Mental_Health_Value	No_Leisure_Time_Physical_Activity_Value	Chronic_Kidney_Disease_Value	Stroke_Value	Chronic_Obstructive_Pulmonary_Disease_Value	Poor_Physical_Health_Value	Total_Score
1	Colorado	WEST	14	4.79	24.6	7.03	16.4	22.1	10.64	18.8	2.44	2.52	5.01	10.54	44
2	Minnesota	MIDWEST	7	4.80	25.0	7.67	16.7	25.6	9.54	21.1	2.37	2.54	4.53	9.76	50
3	Hawaii	WEST	1	4.00	30.0	8.70	14.4	22.1	9.20	23.0	2.50	2.50	4.00	9.40	69
4	North Dakota	MIDWEST	1	5.10	28.0	7.50	17.3	32.0	9.20	23.6	2.40	2.50	5.10	8.70	97
5	Alaska	WEST	1	5.10	29.2	8.00	17.1	30.1	10.60	22.3	2.40	2.60	4.90	10.20	102
6	Vermont	NORTHEAST	1	5.50	25.3	7.30	16.7	22.9	11.50	19.7	2.60	2.70	5.80	10.70	105
7	Montana	WEST	2	5.30	25.6	7.10	19.6	25.2	11.25	21.9	2.45	2.70	5.55	11.10	109
8	Utah	WEST	9	5.18	26.3	8.61	10.7	27.1	11.56	22.8	2.68	2.74	4.84	11.38	121
9	New Mexico	SOUTHWEST	4	5.17	25.7	8.97	16.5	26.0	11.62	20.7	2.73	2.58	5.38	12.22	131
10	Idaho	WEST	3	5.33	28.8	8.27	15.3	29.2	11.40	20.7	2.50	2.73	5.53	11.50	133
11	California	WEST	121	5.12	27.6	9.76	13.7	24.3	11.93	21.2	2.63	2.71	4.96	12.10	135
12	Maine	NORTHEAST	1	5.50	28.4	8.20	16.8	27.5	11.70	20.7	2.50	2.70	6.50	10.90	139
13	Nebraska	MIDWEST	2	5.25	27.9	8.60	19.4	31.6	10.00	24.4	2.50	2.75	5.40	9.75	147
14	South Dakota	MIDWEST	2	5.90	28.0	8.15	20.3	31.1	9.80	21.1	2.50	2.70	5.35	10.75	156
15	Oregon	WEST	8	5.26	26.4	8.93	17.6	28.6	13.38	18.0	2.62	2.83	5.65	12.54	171
16	Arizona	SOUTHWEST	12	5.31	27.8	9.26	15.5	27.5	11.72	23.5	2.79	2.73	5.94	11.70	175
17	Washington	WEST	14	5.43	28.4	8.64	16.6	27.9	12.31	20.1	2.77	2.86	6.11	12.01	183
18	New Hampshire	NORTHEAST	2	5.55	28.1	8.65	18.6	28.6	12.40	26.2	2.50	2.65	6.70	11.35	192
19	Wyoming	WEST	1	5.70	28.5	8.30	21.3	29.5	11.20	26.5	2.40	2.40	6.60	11.50	193
20	Kansas	MIDWEST	6	5.58	30.1	9.45	18.6	33.9	10.35	26.1	2.65	2.88	5.85	10.20	216
21	Illinois	MIDWEST	18	5.68	30.1	9.91	17.1	31.2	11.32	27.1	2.63	2.87	5.66	11.46	216
22	Iowa	MIDWEST	6	5.53	29.0	8.98	19.7	33.8	11.40	27.6	2.55	2.85	5.98	11.05	227
23	Wisconsin	MIDWEST	7	5.73	30.1	8.91	20.0	32.5	11.77	24.2	2.66	2.99	5.70	12.23	246
24	Nevada	WEST	5	5.78	27.1	9.38	19.6	26.1	13.00	25.2	2.74	2.96	6.82	13.16	255
25	Texas	SOUTHWEST	47	5.93	31.3	11.46	16.2	32.9	11.30	30.2	2.86	3.02	5.86	12.62	291
26	South Carolina	SOUTHEAST	5	5.68	34.0	10.60	18.6	30.1	13.14	24.4	2.76	3.42	6.20	12.38	292
27	Rhode Island	NORTHEAST	4	5.90	31.6	9.62	18.9	28.8	14.18	30.4	2.67	2.85	6.67	13.70	305
28	North Carolina	SOUTHEAST	14	6.04	33.3	10.16	19.0	29.6	12.31	25.6	2.79	3.32	6.41	12.67	306
29	Virginia	SOUTHEAST	11	5.56	34.4	11.21	19.6	33.1	11.86	27.4	2.74	3.37	6.24	11.53	312
30	Oklahoma	SOUTHWEST	6	6.25	32.9	9.67	20.4	31.9	12.65	30.9	2.58	2.98	6.60	12.55	316
31	Florida	SOUTHEAST	33	6.05	30.3	10.70	18.9	28.8	13.76	27.7	2.81	3.13	6.59	13.43	318
32	Connecticut	NORTHEAST	8	5.99	31.6	11.04	18.9	30.9	13.95	29.0	2.83	3.31	6.36	13.64	339
33	Massachusetts	NORTHEAST	13	5.99	30.3	10.31	19.7	28.3	14.46	30.8	2.79	3.08	7.02	13.41	339
34	Missouri	MIDWEST	8	6.05	31.5	10.30	22.6	33.6	13.35	27.2	2.66	3.16	7.08	13.36	350
35	Michigan	MIDWEST	16	6.17	32.2	10.00	21.8	32.1	12.78	25.5	2.85	3.26	7.26	12.64	353
36	Georgia	SOUTHEAST	11	6.16	37.0	12.03	19.1	33.2	12.59	28.7	2.99	3.75	6.93	13.12	388
37	New York	NORTHEAST	9	6.08	32.0	11.18	20.3	30.7	14.04	32.5	2.91	3.54	6.92	14.26	395
38	Indiana	MIDWEST	11	6.55	32.9	10.95	21.1	34.2	13.54	29.2	2.83	3.42	7.31	13.51	403
39	Kentucky	SOUTHEAST	2	6.85	36.8	10.80	23.6	33.0	13.00	29.6	2.70	3.20	8.70	13.65	407
40	Arkansas	SOUTHEAST	5	6.86	35.6	10.80	21.5	32.4	13.88	33.3	2.90	3.32	7.46	14.44	433
41	West Virginia	SOUTHEAST	1	7.20	35.8	11.40	23.6	35.9	14.50	30.2	2.70	3.10	8.50	14.60	449
42	Alabama	SOUTHEAST	6	6.62	38.9	12.70	21.1	36.2	14.12	31.3	2.95	3.87	7.73	14.18	467
43	New Jersey	NORTHEAST	9	6.84	35.8	14.13	20.6	34.1	14.50	38.2	3.32	3.88	6.69	15.81	474
44	Tennessee	SOUTHEAST	6	6.70	37.6	12.12	23.0	34.5	14.98	30.5	2.95	3.62	8.07	15.33	479
45	Maryland	SOUTHEAST	1	6.60	39.3	14.10	24.9	34.8	13.60	30.9	3.20	4.40	7.70	13.70	481
46	Pennsylvania	NORTHEAST	7	6.89	33.2	12.07	23.5	35.9	14.57	33.0	3.06	3.67	7.83	14.57	482
47	Louisiana	SOUTHEAST	6	6.82	39.0	12.88	21.2	37.2	14.65	33.3	3.08	3.93	6.97	14.40	487
48	Delaware	SOUTHEAST	1	6.40	38.3	14.20	22.7	37.0	14.20	34.1	3.30	4.30	7.50	14.40	493
49	Ohio	MIDWEST	9	7.38	36.7	13.54	26.0	36.0	15.22	32.7	3.32	4.30	9.32	15.70	524
50	Mississippi	SOUTHEAST	2	6.85	43.5	14.35	23.9	38.1	15.10	38.8	3.30	4.55	7.15	15.85	530

Table 4: Region Heart Health Ranking - Values

Region_Heart_Health_Ranking	Region	Num_States	Coronary_Heart_Disease_Value	High_Blood_Pressure_Value	Diabetes_Value	Smoking_Value	Obesity_Value	Poor_Mental_Health_Value	No_Leisure_Time_Physical_Activity_Value	Chronic_Kidney_Disease_Value	Stroke_Value	Chronic_Obstructive_Pulmonary_Disease_Value	Poor_Physical_Health_Value	Total_Score
1	WEST	11	5.18	27.5	8.43	16.6	26.6	11.5	21.9	2.56	2.69	5.45	11.4	11
2	SOUTHWEST	4	5.67	29.4	9.84	17.1	29.6	11.8	26.3	2.74	2.83	5.94	12.3	27
3	MIDWEST	12	5.81	30.1	9.50	20.0	32.3	11.5	25.8	2.66	3.02	6.21	11.6	30
4	NORTHEAST	9	6.03	30.7	10.28	19.3	29.7	13.5	28.9	2.80	3.15	6.72	13.1	42
5	SOUTHEAST	14	6.46	36.7	12.00	21.5	33.9	13.7	30.4	2.94	3.66	7.30	13.8	55