Pre processed Thesis Code

2023-10-24

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.

```
## Warning: package 'nhanesA' was built under R version 4.2.3
```

```
## Joining by: SEQN, LBXBPB, YEAR
```

```
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, LBXIHG, LBDIHGSI, YEAR
```

```
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, YEAR
```

```
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, YEAR, LBDTHGLC
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, YEAR, LBDTHGLC
```

```
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, YEAR, LBDTHGLC, LBDBCDLC, LB
```

```
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, YEAR, LBDTHGLC, LBDBCDLC, LB
```

```
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, YEAR, LBDTHGLC, LBDBCDLC, LB
```

```
## Joining by: SEQN, LBXBPB, LBDBPBSI, LBXBCD, LBDBCDSI, LBXTHG, LBDTHGSI, YEAR, LBDTHGLC, LBDBCDLC, LB
```

The data displays the Lead by blood level (ug/dL) from the years 1999 to 2017. The dataset has 3 columns which include the sequence number (PATIENT ID), Year (year of measurement), and LBXBPB the measurement of lead by blood level. There are 76,213 rows in the original combined set. There are missing values observed in the measurements of LBXBPB

```
## Joining by: SEQN, BPQ010, BPQ020, BPQ030, BPQ040A, BPQ040B, BPQ040C, BPQ040D, BPQ040E, BPQ040F, BPQ04
```

```
## Joining by: SEQN, BPQ010, BPQ020, BPQ030, BPQ040A, BPQ040B, BPQ040C, BPQ040D, BPQ040E, BPQ040F, BPQ04
```

```
## Joining by: SEQN, BPQ020, BPQ030, BPQ040A, BPQ050A, BPQ060, BPQ070, BPQ080, BPQ090A, BPQ090B, BPQ090
## Joining by: SEQN, BPQ020, BPQ030, BPQ040A, BPQ050A, BPQ060, BPQ070, BPQ080, BPQ090A, BPQ090B, BPQ090
```

```
## Joining by: SEQN, BPQ020, BPQ030, BPQ040A, BPQ050A, BPQ060, BPQ070, BPQ080, BPQ090A, BPQ090B, BPQ090
```

```
## Joining by: SEQN, BPQ020, BPQ030, BPQ040A, BPQ050A, BPQ060, BPQ070, BPQ080, BPQ090D, BPQ100D, YEAR,
```

```
## Joining by: SEQN, BPQ020, BPQ030, BPQ040A, BPQ050A, BPQ060, BPQ070, BPQ080, BPQ090D, BPQ100D, YEAR,
```

```
## Joining by: SEQN, BPQ020, BPQ030, BPQ040A, BPQ050A, BPQ060, BPQ070, BPQ080, BPQ090D, BPQ100D, YEAR,
## Joining by: SEQN, BPQ020, BPQ030, BPQ040A, BPQ050A, BPQ060, BPQ070, BPQ080, BPQ090D, BPQ100D, YEAR,
```

```
## Joining by: SEQN, PEASCST1, PEASCTM1, PEASCCT1, BPXCHR, BPQ150A, BPQ150B, BPQ150C, BPQ150D, BPAARM,
## Joining by: SEQN, PEASCST1, PEASCTM1, PEASCCT1, BPXCHR, BPQ150A, BPQ150B, BPQ150C, BPQ150D, BPAARM,
```

```
## Joining by: SEQN, PEASCST1, PEASCTM1, PEASCCT1, BPXCHR, BPQ150A, BPQ150B, BPQ150C, BPQ150D, BPAARM,
```

```
## Joining by: SEQN, PEASCST1, PEASCTM1, PEASCCT1, BPXCHR, BPQ150A, BPQ150B, BPQ150C, BPQ150D, BPAARM,
## Joining by: SEQN, PEASCST1, PEASCTM1, PEASCCT1, BPXCHR, BPQ150A, BPQ150B, BPQ150C, BPQ150D, BPAARM,
## Joining by: SEQN, PEASCST1, PEASCTM1, PEASCCT1, BPXCHR, BPQ150A, BPQ150B, BPQ150C, BPQ150D, BPAARM,
```

```
## Joining by: SEQN, PEASCST1, PEASCTM1, PEASCCT1, BPXCHR, BPAARM, BPACSZ, BPXPLS, BPXPULS, BPXPTY, BPX
```

```
## Joining by: SEQN, PEASCCT1, BPXCHR, BPAARM, BPACSZ, BPXPLS, BPXPULS, BPXPTY, BPXML1, BPXSY1, BPXDI1,
## Joining by: SEQN, PEASCCT1, BPXCHR, BPAARM, BPACSZ, BPXPLS, BPXPULS, BPXPTY, BPXML1, BPXSY1, BPXDI1,
```

```
## 'data.frame':    96766 obs. of  31 variables:
##  $ SEQN    : num  1 2 3 4 5 6 7 8 9 10 ...
##  $ PEASCST1: num  1 1 1 1 1 1 1 1 1 1 ...
##  $ PEASCTM1: num  151 764 571 47 694 581 852 807 579 584 ...
##  $ PEASCCT1: num  0 0 0 0 0 0 0 0 0 0 ...
##  $ BPXCHR  : num  110 NA NA 108 NA NA NA NA NA NA ...
##  $ BPQ150A : num  NA 2 2 NA 2 2 2 1 2 2 ...
##  $ BPQ150B : num  NA 2 2 NA 2 2 2 2 2 2 ...
##  $ BPQ150C : num  NA 2 2 NA 2 2 2 2 2 2 ...
##  $ BPQ150D : num  NA 2 2 NA 2 2 2 2 2 2 ...
##  $ BPAARM  : num  NA 1 1 NA 1 1 1 1 1 1 ...
##  $ BPACSZ  : num  NA 3 2 NA 4 2 4 2 3 4 ...
##  $ BPXPLS  : num  NA 68 104 NA 66 70 58 96 84 58 ...
##  $ BPXDB   : num  NA NA NA NA NA NA NA NA NA NA ...
##  $ BPXPULS : num  1 1 1 1 1 1 1 1 1 1 ...
##  $ BPXPTY  : num  NA 1 1 NA 1 1 1 1 1 1 ...
##  $ BPXML1  : num  NA 130 140 NA 140 140 160 130 140 190 ...
##  $ BPXSY1  : num  NA 106 110 NA 122 116 130 NA 104 152 ...
##  $ BPXDI1  : num  NA 58 60 NA 82 64 78 NA 60 98 ...
##  $ BPAEN1  : num  NA 2 2 NA 2 2 2 2 2 2 ...
##  $ BPXSY2  : num  NA 98 104 NA 122 116 122 106 114 142 ...
##  $ BPXDI2  : num  NA 56 64 NA 84 60 80 44 52 94 ...
##  $ BPAEN2  : num  NA 2 2 NA 2 2 2 2 2 2 ...
##  $ BPXSY3  : num  NA 98 112 NA 122 112 124 100 110 142 ...
##  $ BPXDI3  : num  NA 56 62 NA 82 80 82 48 48 96 ...
##  $ BPAEN3  : num  NA 2 2 NA 2 2 2 2 2 2 ...
##  $ BPXSY4  : num  NA NA NA NA NA NA NA 96 NA NA ...
##  $ BPXDI4  : num  NA NA NA NA NA NA NA 56 NA NA ...
##  $ BPAEN4  : num  NA NA NA NA NA NA NA 2 NA NA ...
##  $ BPXSAR  : num  NA 98 108 NA 122 114 123 98 112 142 ...
##  $ BPXDAR  : num  NA 56 63 NA 83 70 81 52 50 95 ...
##  $ YEAR    : num  1999 1999 1999 1999 1999 ...
```

The hypertension data displays two binary measurements from the years 1999 to 2017. The dataset has 4 columns which include the sequence number (PATIENT ID), Year (year of measurement), BPQ020 a binary measurement answering if patient has "ever been told by a doctor or other health professional that {you/s/he} had hypertension, also called high blood pressure?", and BPQ040 another binary measurement answering if patient "Because of {your/SP's} (high blood pressure/hypertension), {have you/has s/he} ever been told to . . . take prescribed medicine?". The indicators for both binary variables is as follows (1=Yes, 2=No). There are 63,592 rows in the combined set. There are multiple missing values observed in the measurements of BPQ040A we might want to consider that they may have never been asked.

The blood pressure data displays 8 numerical measurements from the years 1999 to 2017 for systolic and diastolic blood pressure points at different time points within the year. The dataset has 10 columns which include the sequence number (PATIENT ID), Year (year of measurement), BPXSY1,BPXSY2,BPXSY3, BPXSI4 which are readings for systolic blood pressure. The numbers at the end of the variables indicate the reading number and usually the fourth is only necessary for extreme cases.It's measurement units are mm Hg. BPXDI1,BPXDIY2,BPXDI3, BPXDI4 which are readings for diastolic blood pressure. The numbers at the end of the variables indicate the reading number and usually the fourth is only necessary for extreme cases.It's measurement units are mm Hg. There are 96,766 rows in the combined set. There are multiple missing values observed in the measurements in all measurements for systolic and diastolic and bp.

```
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDAGEEX, RIDRETH1, RI
```

```
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDAGEEX, RIDRETH1, RI
```

```
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDAGEEX, RIDRETH1, DM
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDAGEEX, RIDRETH1, DM
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDAGEEX, RIDRETH1, DM
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDRETH1, DMDCITZN, DM
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDRETH1, DMDCITZN, DM
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDRETH1, DMDCITZN, DM
## Joining by: SEQN, SDDSRVYR, RIDSTATR, RIDEXMON, RIAGENDR, RIDAGEYR, RIDAGEMN, RIDRETH1, DMDCITZN, DM
```

The blood pressure data displays 5 numerical measurements from the years 1999 to 2017 for patient demographics including the patient age, patient ethnicity/race, ratio of income for patient, education level and gender. Refer to the codebook in excel sheet to see the measurements of each variable. The demographics table has 101,316 rows and 7 columns. There seems to be missingness for measurements in income ratio and education level.

The data displays two binary measurements from the years 1999 to 2017. The datasethas 4 columns which include the sequence nuber (PATIENT ID), Year (year of measurement), BPQ020 a binary measurement answering if patient has "ever been told by a doctor or other health professional that {you/s/he} had hypertension, also called high blood pressure?", and BPQ040 another binary measurement answering if patient "Because of {your/SP's} (high blood pressure/hypertension), {have you/has s/he} ever been told to . . . take prescribed medicine?". The indicators for both binary variables is as follows (1=Yes, 2=No). There are 63,592 rows in the combined set. There are multiple missing values observed in the measurements of BPQ040A we might want to consider that they may have never been asked.

```
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, BMXWT, BMIWT, BMXRECUM, BMIRECUM, BMXHEAD, BMIHEAD, BMXHT, BMIHT, BMXBMI, BMXLEG,
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, ALQ140Q, ALQ140U, ALQ150, YEAR
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, ALQ140Q, ALQ140U, ALQ150, YEAR
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, ALQ140Q, ALQ140U, ALQ150, YEAR, ALQ101
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, ALQ140Q, ALQ140U, ALQ150, YEAR, ALQ101
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, ALQ140Q, ALQ140U, ALQ150, YEAR, ALQ101
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, YEAR, ALQ101
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, YEAR, ALQ101, ALQ141Q, ALQ141U, ALQ151
## Joining by: SEQN, ALQ110, ALQ120Q, ALQ120U, ALQ130, YEAR, ALQ101, ALQ141Q, ALQ141U, ALQ151, ALQ160
## Joining by: SEQN, ALQ130, YEAR, ALQ151
## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD070, SMD075, SMD080,
## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD070, SMD075, SMD100BR
## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD070, SMD075, SMD100BR
```

```
## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD100BR, SMD100FL, SMD1
## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD100BR, SMD100FL, SMD1

## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD100BR, SMD100FL, SMD1

## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD100BR, SMD100FL, SMD1

## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD055, SMD057, SMD100BR, SMD100FL, SMD1

## Joining by: SEQN, SMQ020, SMD030, SMQ040, SMQ050Q, SMQ050U, SMD057, SMD100BR, SMD100FL, SMD100MN, SM

## Joining by: SEQN, HID030A, HID030B, HID030C, HID030D, HID030E, HID040, HIQ210, HIQ220, YEAR, HIQ011
## Joining by: SEQN, HID030A, HID030B, HID030C, HID030D, HID030E, HID040, HIQ210, HIQ220, YEAR, HIQ011

## Joining by: SEQN, HIQ210, YEAR, HIQ011

## Joining by: SEQN, HIQ210, YEAR, HIQ011, HIQ031A, HIQ031B, HIQ031C, HIQ031D, HIQ031E, HIQ031F, HIQ031

## Joining by: SEQN, HIQ210, YEAR, HIQ011, HIQ031A, HIQ031B, HIQ031C, HIQ031D, HIQ031E, HIQ031F, HIQ031

## Joining by: SEQN, HIQ210, YEAR, HIQ011, HIQ031A, HIQ031B, HIQ031C, HIQ031D, HIQ031E, HIQ031F, HIQ031
## Joining by: SEQN, HIQ210, YEAR, HIQ011, HIQ031A, HIQ031B, HIQ031C, HIQ031D, HIQ031E, HIQ031F, HIQ031
## Joining by: SEQN, HIQ210, YEAR, HIQ011, HIQ031A, HIQ031B, HIQ031C, HIQ031D, HIQ031E, HIQ031F, HIQ031

## Joining by: SEQN, HIQ210, YEAR, HIQ011, HIQ031A, HIQ031B, HIQ031C, HIQ031D, HIQ031E, HIQ031F, HIQ031

##   SEQN YEAR LBXBPB BPQ020 BPQ040A BPXSY1 BPXSY2 BPXSY3 BPXSY4 BPXDI1 BPXDI2
## 1    1 1999     NA     NA      NA     NA     NA     NA     NA     NA     NA
## 2    2 1999    5.0      2      NA    106     98     98     NA     58     56
## 3    3 1999    2.2     NA      NA    110    104    112     NA     60     64
## 4    4 1999    9.2     NA      NA     NA     NA     NA     NA     NA     NA
## 5    5 1999    1.6      1       1    122    122    122     NA     82     84
## 6    6 1999    0.2      2      NA    116    116    112     NA     64     60
##   BPXDI3 BPXDI4 DMDHRAGE RIDRETH1 INDFMPIR DMDEDUC2 RIAGENDR BMXBMI ALQ120Q
## 1     NA     NA       27        4     0.86       NA        2  14.90      NA
## 2     56     NA       77        3     5.00        5        1  24.90      24
## 3     62     NA       37        3     1.47       NA        2  17.63      NA
## 4     NA     NA       34        4     0.57       NA        1     NA      NA
## 5     82     NA       42        3     5.00        5        1  29.10       4
## 6     80     NA       19        5     1.21       NA        2  22.56      NA
##   SMQ040 SMQ020 HIQ011 SYSAVG DIAAVG
## 1     NA     NA      1     NA     NA
## 2     NA      2      1     98     56
## 3     NA     NA      1    108     63
## 4     NA     NA      1     NA     NA
## 5      3      1      1    122     83
## 6     NA     NA      1    114     70

##   SEQN YEAR LBXBPB BPQ020 BPQ040A BPXSY1 BPXSY2 BPXSY3 BPXSY4 BPXDI1 BPXDI2
## 1    1 1999     NA     NA      NA     NA     NA     NA     NA     NA     NA
## 2    2 1999    5.0      2      NA    106     98     98     NA     58     56
## 3    3 1999    2.2     NA      NA    110    104    112     NA     60     64
## 4    4 1999    9.2     NA      NA     NA     NA     NA     NA     NA     NA
## 5    5 1999    1.6      1       1    122    122    122     NA     82     84
## 6    6 1999    0.2      2      NA    116    116    112     NA     64     60
##   BPXDI3 BPXDI4 DMDHRAGE RIDRETH1 INDFMPIR DMDEDUC2 RIAGENDR BMXBMI ALQ120Q
## 1     NA     NA       27        4     0.86       NA        2  14.90      NA
## 2     56     NA       77        3     5.00        5        1  24.90      24
## 3     62     NA       37        3     1.47       NA        2  17.63      NA
## 4     NA     NA       34        4     0.57       NA        1     NA      NA
```

```
## 5     82     NA       42        3     5.00        5        1  29.10       4
## 6     80     NA       19        5     1.21       NA        2  22.56      NA
##   SMQ040 SMQ020 HIQ011 SYSAVG DIAAVG HTN
## 1     NA     NA      1     NA     NA  NA
## 2     NA      2      1     98     56   0
## 3     NA     NA      1    108     63  NA
## 4     NA     NA      1     NA     NA  NA
## 5      3      1      1    122     83   1
## 6     NA     NA      1    114     70   0
```

```
## 'data.frame':    101316 obs. of  26 variables:
##  $ SEQN    : num  1 2 3 4 5 6 7 8 9 10 ...
##  $ YEAR    : num  1999 1999 1999 1999 1999 ...
##  $ LBXBPB  : num  NA 5 2.2 9.2 1.6 0.2 1.6 1.8 1.6 2.3 ...
##  $ BPQ020  : num  NA 2 NA NA 1 2 1 NA NA 2 ...
##  $ BPQ040A : num  NA NA NA NA 1 NA 1 NA NA NA ...
##  $ BPXSY1  : num  NA 106 110 NA 122 116 130 NA 104 152 ...
##  $ BPXSY2  : num  NA 98 104 NA 122 116 122 106 114 142 ...
##  $ BPXSY3  : num  NA 98 112 NA 122 112 124 100 110 142 ...
##  $ BPXSY4  : num  NA NA NA NA NA NA NA 96 NA NA ...
##  $ BPXDI1  : num  NA 58 60 NA 82 64 78 NA 60 98 ...
##  $ BPXDI2  : num  NA 56 64 NA 84 60 80 44 52 94 ...
##  $ BPXDI3  : num  NA 56 62 NA 82 80 82 48 48 96 ...
##  $ BPXDI4  : num  NA NA NA NA NA NA NA 56 NA NA ...
##  $ DMDHRAGE: num  27 77 37 34 42 19 59 30 37 43 ...
##  $ RIDRETH1: num  4 3 3 4 3 5 4 3 4 4 ...
##  $ INDFMPIR: num  0.86 5 1.47 0.57 5 1.21 NA 0.53 NA NA ...
##  $ DMDEDUC2: num  NA 5 NA NA 5 NA 2 NA NA 3 ...
##  $ RIAGENDR: num  2 1 2 1 1 2 2 1 2 1 ...
##  $ BMXBMI  : num  14.9 24.9 17.6 NA 29.1 ...
##  $ ALQ120Q : num  NA 24 NA NA 4 NA NA NA NA 6 ...
##  $ SMQ040  : num  NA NA NA NA 3 NA 3 NA NA 1 ...
##  $ SMQ020  : num  NA 2 NA NA 1 NA 1 NA NA 1 ...
##  $ HIQ011  : num  1 1 1 1 1 1 NA 2 1 1 ...
##  $ SYSAVG  : num  NA 98 108 NA 122 ...
##  $ DIAAVG  : num  NA 56 63 NA 83 ...
##  $ HTN     : num  NA 0 NA NA 1 0 1 NA NA 1 ...
```

```
##   SEQN YEAR LBXBPB BPQ020 BPQ040A BPXSY1 BPXSY2 BPXSY3 BPXSY4 BPXDI1 BPXDI2
## 1    1 1999     NA     NA      NA     NA     NA     NA     NA     NA     NA
## 2    2 1999    5.0      2      NA    106     98     98     NA     58     56
## 3    3 1999    2.2     NA      NA    110    104    112     NA     60     64
## 4    4 1999    9.2     NA      NA     NA     NA     NA     NA     NA     NA
## 5    5 1999    1.6      1       1    122    122    122     NA     82     84
## 6    6 1999    0.2      2      NA    116    116    112     NA     64     60
##   BPXDI3 BPXDI4 DMDHRAGE RIDRETH1 INDFMPIR DMDEDUC2 RIAGENDR BMXBMI ALQ120Q
## 1     NA     NA       27        4     0.86       NA        2  14.90      NA
## 2     56     NA       77        3     5.00        5        1  24.90      24
## 3     62     NA       37        3     1.47       NA        2  17.63      NA
## 4     NA     NA       34        4     0.57       NA        1     NA      NA
## 5     82     NA       42        3     5.00        5        1  29.10       4
## 6     80     NA       19        5     1.21       NA        2  22.56      NA
##   SMQ040 SMQ020 HIQ011 SYSAVG DIAAVG HTN smokingstatus
## 1     NA     NA      1     NA     NA  NA            NA
## 2     NA      2      1     98     56   0             1
```

```
## 3     NA     NA      1    108     63  NA            NA
## 4     NA     NA      1     NA     NA  NA            NA
## 5      3      1      1    122     83   1             3
## 6     NA     NA      1    114     70   0            NA
```

```
## 'data.frame':    101316 obs. of  27 variables:
##  $ SEQN          : num  1 2 3 4 5 6 7 8 9 10 ...
##  $ YEAR          : num  1999 1999 1999 1999 1999 ...
##  $ LBXBPB        : num  NA 5 2.2 9.2 1.6 0.2 1.6 1.8 1.6 2.3 ...
##  $ BPQ020        : num  NA 2 NA NA 1 2 1 NA NA 2 ...
##  $ BPQ040A       : num  NA NA NA NA 1 NA 1 NA NA NA ...
##  $ BPXSY1        : num  NA 106 110 NA 122 116 130 NA 104 152 ...
##  $ BPXSY2        : num  NA 98 104 NA 122 116 122 106 114 142 ...
##  $ BPXSY3        : num  NA 98 112 NA 122 112 124 100 110 142 ...
##  $ BPXSY4        : num  NA NA NA NA NA NA NA 96 NA NA ...
##  $ BPXDI1        : num  NA 58 60 NA 82 64 78 NA 60 98 ...
##  $ BPXDI2        : num  NA 56 64 NA 84 60 80 44 52 94 ...
##  $ BPXDI3        : num  NA 56 62 NA 82 80 82 48 48 96 ...
##  $ BPXDI4        : num  NA NA NA NA NA NA NA 56 NA NA ...
##  $ DMDHRAGE      : num  27 77 37 34 42 19 59 30 37 43 ...
##  $ RIDRETH1      : num  4 3 3 4 3 5 4 3 4 4 ...
##  $ INDFMPIR      : num  0.86 5 1.47 0.57 5 1.21 NA 0.53 NA NA ...
##  $ DMDEDUC2      : num  NA 5 NA NA 5 NA 2 NA NA 3 ...
##  $ RIAGENDR      : num  2 1 2 1 1 2 2 1 2 1 ...
##  $ BMXBMI        : num  14.9 24.9 17.6 NA 29.1 ...
##  $ ALQ120Q       : num  NA 24 NA NA 4 NA NA NA NA 6 ...
##  $ SMQ040        : num  NA NA NA NA 3 NA 3 NA NA 1 ...
##  $ SMQ020        : num  NA 2 NA NA 1 NA 1 NA NA 1 ...
##  $ HIQ011        : num  1 1 1 1 1 1 NA 2 1 1 ...
##  $ SYSAVG        : num  NA 98 108 NA 122 ...
##  $ DIAAVG        : num  NA 56 63 NA 83 ...
##  $ HTN           : num  NA 0 NA NA 1 0 1 NA NA 1 ...
##  $ smokingstatus: num  NA 1 NA NA 3 NA 3 NA NA 2 ...
```

Table 1: Missing Value Summary

variable	n_miss	pct_miss
BPXSY4	92850	91.6439654
BPXDI4	92850	91.6439654
BPQ040A	81882	80.8184295
SMQ040	76180	75.1904931
ALQ120Q	64498	63.6602314
DMDEDUC2	46241	45.6403727
smokingstatus	45403	44.8132575
SMQ020	45340	44.7510758
HTN	41515	40.9757590
BPQ020	37993	37.4995065
BPXDI3	33989	33.5475147
BPXSY3	33988	33.5465277
LBXBPB	33949	33.5080343
BPXSY2	33382	32.9483991
BPXDI2	33382	32.9483991
BPXSY1	32740	32.3147380
BPXDI1	32740	32.3147380

variable	n_miss	pct_miss
SYSAVG	27857	27.4951636
DIAAVG	27857	27.4951636
BMXBMI	13517	13.3414268
DMDHRAGE	9269	9.1486044
INDFMPIR	9196	9.0765526
HIQ011	469	0.4629081
SEQN	0	0.0000000
YEAR	0	0.0000000
RIDRETH1	0	0.0000000
RIAGENDR	0	0.0000000

```
## 'data.frame':    55752 obs. of  27 variables:
##  $ SEQN          : num  2 3 5 6 7 8 9 10 11 12 ...
##  $ YEAR          : num  1999 1999 1999 1999 1999 ...
##  $ LBXBPB        : num  5 2.2 1.6 0.2 1.6 1.8 1.6 2.3 3.1 2.4 ...
##  $ BPQ020        : num  2 NA 1 2 1 NA NA 2 NA 1 ...
##  $ BPQ040A       : num  NA NA 1 NA 1 NA NA NA NA 1 ...
##  $ BPXSY1        : num  106 110 122 116 130 NA 104 152 110 182 ...
##  $ BPXSY2        : num  98 104 122 116 122 106 114 142 110 172 ...
##  $ BPXSY3        : num  98 112 122 112 124 100 110 142 104 176 ...
##  $ BPXSY4        : num  NA NA NA NA NA 96 NA NA NA NA ...
##  $ BPXDI1        : num  58 60 82 64 78 NA 60 98 52 108 ...
##  $ BPXDI2        : num  56 64 84 60 80 44 52 94 52 98 ...
##  $ BPXDI3        : num  56 62 82 80 82 48 48 96 50 100 ...
##  $ BPXDI4        : num  NA NA NA NA NA 56 NA NA NA NA ...
##  $ DMDHRAGE      : num  77 37 42 19 59 30 37 43 50 32 ...
##  $ RIDRETH1      : num  3 3 3 5 4 3 4 4 3 3 ...
##  $ INDFMPIR      : num  5 1.47 5 1.21 NA 0.53 NA NA 1.25 4.93 ...
##  $ DMDEDUC2      : num  5 NA 5 NA 2 NA NA 3 NA 4 ...
##  $ RIAGENDR      : num  1 2 1 2 2 1 2 1 1 1 ...
##  $ BMXBMI        : num  24.9 17.6 29.1 22.6 29.4 ...
##  $ ALQ120Q       : num  24 NA 4 NA NA NA NA 6 NA 2 ...
##  $ SMQ040        : num  NA NA 3 NA 3 NA NA 1 NA NA ...
##  $ SMQ020        : num  2 NA 1 NA 1 NA NA 1 NA 2 ...
##  $ HIQ011        : num  1 1 1 1 NA 2 1 1 1 1 ...
##  $ SYSAVG        : num  98 108 122 114 123 ...
##  $ DIAAVG        : num  56 63 83 70 81 ...
##  $ HTN           : num  0 NA 1 0 1 NA NA 1 NA 1 ...
##  $ smokingstatus: num  1 NA 3 NA 3 NA NA 2 NA 1 ...
```

Table 2: Missing Value Summary

variable	n_miss	pct_miss
BPXSY4	49532	88.8434496
BPXDI4	49532	88.8434496
BPQ040A	42078	75.4735256
SMQ040	38076	68.2953078
ALQ120Q	28446	51.0223848
DMDEDUC2	17247	30.9352131
smokingstatus	16786	30.1083369
SMQ020	16761	30.0634955

variable	n_miss	pct_miss
BPQ020	11549	20.7149519
HTN	11299	20.2665375
DMDHRAGE	6301	11.3018367
BPXDI3	4689	8.4104606
BPXSY3	4688	8.4086670
INDFMPIR	4678	8.3907304
BPXSY2	4217	7.5638542
BPXDI2	4217	7.5638542
BPXSY1	3722	6.6759937
BPXDI1	3722	6.6759937
BMXBMI	533	0.9560195
HIQ011	129	0.2313818
SEQN	0	0.0000000
YEAR	0	0.0000000
LBXBPB	0	0.0000000
RIDRETH1	0	0.0000000
RIAGENDR	0	0.0000000
SYSAVG	0	0.0000000
DIAAVG	0	0.0000000

```
## 'data.frame':    24444 obs. of  27 variables:
##  $ SEQN          : num  2 5 12 13 14 15 20 24 25 29 ...
##  $ YEAR          : num  1999 1999 1999 1999 1999 ...
##  $ LBXBPB        : num  5 1.6 2.4 1.6 5.5 1.5 1 3.8 0.9 1.9 ...
##  $ BPQ020        : num  2 1 1 1 2 2 2 2 1 1 ...
##  $ BPQ040A       : num  NA 1 1 1 NA NA NA NA 1 1 ...
##  $ BPXSY1        : num  106 122 182 140 142 106 102 110 NA 124 ...
##  $ BPXSY2        : num  98 122 172 130 NA 112 102 116 120 122 ...
##  $ BPXSY3        : num  98 122 176 130 134 106 104 112 118 126 ...
##  $ BPXSY4        : num  NA NA NA NA 138 NA NA NA 120 NA ...
##  $ BPXDI1        : num  58 82 108 78 56 68 56 78 NA 70 ...
##  $ BPXDI2        : num  56 84 98 62 NA 68 58 70 86 76 ...
##  $ BPXDI3        : num  56 82 100 70 58 70 62 72 86 66 ...
##  $ BPXDI4        : num  NA NA NA NA 64 NA NA NA 84 NA ...
##  $ DMDHRAGE      : num  77 42 32 75 81 38 22 54 46 62 ...
##  $ RIDRETH1      : num  3 3 3 1 3 3 1 3 3 3 ...
##  $ INDFMPIR      : num  5 5 4.93 1.07 2.67 4.52 3.03 2.67 1.77 1.07 ...
##  $ DMDEDUC2      : num  5 5 4 1 2 5 1 3 4 3 ...
##  $ RIAGENDR      : num  1 1 1 1 1 2 2 2 2 1 ...
##  $ BMXBMI        : num  24.9 29.1 30.6 25.6 27.3 ...
##  $ ALQ120Q       : num  24 4 2 1 1 4 3 4 4 0 ...
##  $ SMQ040        : num  NA 3 NA 3 1 1 3 1 3 3 ...
##  $ SMQ020        : num  2 1 2 1 1 1 1 1 1 1 ...
##  $ HIQ011        : num  1 1 1 1 1 1 2 2 1 1 ...
##  $ SYSAVG        : num  98 122 174 130 136 ...
##  $ DIAAVG        : num  56 83 99 66 61 ...
##  $ HTN           : num  0 1 1 1 1 0 0 0 1 1 ...
##  $ smokingstatus: num  1 3 1 3 2 2 3 2 3 3 ...
```

```
## 'data.frame':    24444 obs. of  28 variables:
##  $ SEQN          : num  2 5 12 13 14 15 20 24 25 29 ...
##  $ YEAR          : num  1999 1999 1999 1999 1999 ...
##  $ LBXBPB        : num  5 1.6 2.4 1.6 5.5 1.5 1 3.8 0.9 1.9 ...
```

```
##  $ BPQ020       : num  2 1 1 1 2 2 2 2 1 1 ...
##  $ BPQ040A      : num  NA 1 1 1 NA NA NA NA 1 1 ...
##  $ BPXSY1       : num  106 122 182 140 142 106 102 110 NA 124 ...
##  $ BPXSY2       : num  98 122 172 130 NA 112 102 116 120 122 ...
##  $ BPXSY3       : num  98 122 176 130 134 106 104 112 118 126 ...
##  $ BPXSY4       : num  NA NA NA NA 138 NA NA NA 120 NA ...
##  $ BPXDI1       : num  58 82 108 78 56 68 56 78 NA 70 ...
##  $ BPXDI2       : num  56 84 98 62 NA 68 58 70 86 76 ...
##  $ BPXDI3       : num  56 82 100 70 58 70 62 72 86 66 ...
##  $ BPXDI4       : num  NA NA NA NA 64 NA NA NA 84 NA ...
##  $ DMDHRAGE     : num  77 42 32 75 81 38 22 54 46 62 ...
##  $ RIDRETH1     : num  3 3 3 1 3 3 1 3 3 3 ...
##  $ INDFMPIR     : num  5 5 4.93 1.07 2.67 4.52 3.03 2.67 1.77 1.07 ...
##  $ DMDEDUC2     : num  5 5 4 1 2 5 1 3 4 3 ...
##  $ RIAGENDR     : num  1 1 1 1 1 2 2 2 2 1 ...
##  $ BMXBMI       : num  24.9 29.1 30.6 25.6 27.3 ...
##  $ ALQ120Q      : num  24 4 2 1 1 4 3 4 4 0 ...
##  $ SMQ040       : num  NA 3 NA 3 1 1 3 1 3 3 ...
##  $ SMQ020       : num  2 1 2 1 1 1 1 1 1 1 ...
##  $ HIQ011       : num  1 1 1 1 1 1 2 2 1 1 ...
##  $ SYSAVG       : num  98 122 174 130 136 ...
##  $ DIAAVG       : num  56 83 99 66 61 ...
##  $ HTN          : num  0 1 1 1 1 0 0 0 1 1 ...
##  $ smokingstatus: num  1 3 1 3 2 2 3 2 3 3 ...
##  $ ALCSTATUS    : chr  "1" "1" "1" "1" ...
```

```
##   SEQN YEAR Blood Lead Level Hypertension Diagnosis BPQ040A BPXSY1 BPXSY2
## 1    2 1999              5.0                      2      NA    106     98
## 2    5 1999              1.6                      1       1    122    122
## 3   12 1999              2.4                      1       1    182    172
## 4   13 1999              1.6                      1       1    140    130
## 5   14 1999              5.5                      2      NA    142     NA
## 6   15 1999              1.5                      2      NA    106    112
##   BPXSY3 BPXSY4 BPXDI1 BPXDI2 BPXDI3 BPXDI4 Age Race/Ethnicity
## 1     98     NA     58     56     56     NA  77              3
## 2    122     NA     82     84     82     NA  42              3
## 3    176     NA    108     98    100     NA  32              3
## 4    130     NA     78     62     70     NA  75              1
## 5    134    138     56     NA     58     64  81              3
## 6    106     NA     68     68     70     NA  38              3
##   Ratio of Family Income to Poverty Level Education level Sex   BMI
## 1                                    5.00               5   1 24.90
## 2                                    5.00               5   1 29.10
## 3                                    4.93               4   1 30.62
## 4                                    1.07               1   1 25.57
## 5                                    2.67               2   1 27.33
## 6                                    4.52               5   2 26.68
##   Number of Drinks/Year SMQ040 SMQ020 Health Insurance Coverage
## 1                    24     NA      2                        1
## 2                     4      3      1                        1
## 3                     2     NA      2                        1
## 4                     1      3      1                        1
## 5                     1      1      1                        1
## 6                     4      1      1                        1
```

```
##   Average Systolic Blood Pressure Average Diastolic Blood Pressure
## 1                              98                                56
## 2                             122                                83
## 3                             174                                99
## 4                             130                                66
## 5                             136                                61
## 6                             109                                69
##   Hypertension Status Smoking Status Alcohol Usage
## 1                   0              1             1
## 2                   1              3             1
## 3                   1              1             1
## 4                   1              3             1
## 5                   1              2             1
## 6                   0              2             1
```

```
## nhanes_quantcut
## [0.05,0.88]  (0.88,1.4]  (1.4,2.23] (2.23,61.3]
##        6131        6251        5967        6080
```

```
## nhanes_quantcut_rank
##   Q1   Q2   Q3   Q4
## 6131 6251 5967 6080
```

```
##
##                                                    Overall
##   n                                                 24429
##   Blood Lead Level (mean (SD))                       1.84 (1.81)
##   Average Systolic Blood Pressure (mean (SD))      123.62 (18.62)
##   Average Diastolic Blood Pressure (mean (SD))      70.07 (13.34)
##   Education level (%)
##      1                                               2494 (10.2)
##      2                                               3624 (14.8)
##      3                                               5660 (23.2)
##      4                                               7075 (29.0)
##      5                                               5558 (22.8)
##      7                                                  7 ( 0.0)
##      9                                                 11 ( 0.0)
##   Age (mean (SD))                                   50.60 (16.81)
##   Race/Ethnicity (%)
##      1                                               4141 (17.0)
##      2                                               1822 ( 7.5)
##      3                                              12263 (50.2)
##      4                                               4693 (19.2)
##      5                                               1510 ( 6.2)
##   Ratio of Family Income to Poverty Level (mean (SD))  2.65 (1.63)
##   BMI (mean (SD))                                   28.90 (6.60)
##   Alcohol Usage = 1 (%)                             18876 (77.3)
##   Smoking Status (%)
##      1                                              11705 (47.9)
##      2                                               5771 (23.6)
##      3                                               6953 (28.5)
##   Hypertension Status = 1 (%)                       13068 (53.6)
##   Sex = 2 (%)                                       11466 (46.9)
##   Health Insurance Coverage = 2 (%)                  5164 (21.1)
```

```
##                                                   Stratified by BloodLeadQuartile
```

```
##                                                        Q1
##   n                                                      6131
##   Blood Lead Level (mean (SD))                           0.62 (0.17)
##   Average Systolic Blood Pressure (mean (SD))          116.86 (15.05)
##   Average Diastolic Blood Pressure (mean (SD))          68.87 (12.24)
##   Education level (%)
##      1                                                   273 ( 4.5)
##      2                                                   624 (10.2)
##      3                                                  1267 (20.7)
##      4                                                  2203 (35.9)
##      5                                                  1762 (28.7)
##      7                                                     1 ( 0.0)
##      9                                                     1 ( 0.0)
##   Age (mean (SD))                                       41.95 (14.48)
##   Race/Ethnicity (%)
##      1                                                   967 (15.8)
##      2                                                   575 ( 9.4)
##      3                                                  3069 (50.1)
##      4                                                  1073 (17.5)
##      5                                                   447 ( 7.3)
##   Ratio of Family Income to Poverty Level (mean (SD))    2.74 (1.63)
##   BMI (mean (SD))                                       30.03 (7.76)
##   Alcohol Usage = 1 (%)                                 4981 (81.2)
##   Smoking Status (%)
##      1                                                  4013 (65.5)
##      2                                                   883 (14.4)
##      3                                                  1235 (20.1)
##   Hypertension Status = 1 (%)                           2293 (37.4)
##   Sex = 2 (%)                                           4096 (66.8)
##   Health Insurance Coverage = 2 (%)                     1184 (19.3)
##                                                       Stratified by BloodLeadQuartile
##                                                        Q2
##   n                                                      6251
##   Blood Lead Level (mean (SD))                           1.14 (0.16)
##   Average Systolic Blood Pressure (mean (SD))          122.50 (17.58)
##   Average Diastolic Blood Pressure (mean (SD))          69.97 (13.05)
##   Education level (%)
##      1                                                   505 ( 8.1)
##      2                                                   859 (13.7)
##      3                                                  1454 (23.3)
##      4                                                  1840 (29.4)
##      5                                                  1590 (25.4)
##      7                                                     1 ( 0.0)
##      9                                                     2 ( 0.0)
##   Age (mean (SD))                                       49.07 (16.24)
##   Race/Ethnicity (%)
##      1                                                   979 (15.7)
##      2                                                   550 ( 8.8)
##      3                                                  3181 (50.9)
##      4                                                  1121 (17.9)
##      5                                                   420 ( 6.7)
##   Ratio of Family Income to Poverty Level (mean (SD))    2.77 (1.65)
##   BMI (mean (SD))                                       29.16 (6.76)
##   Alcohol Usage = 1 (%)                                 4853 (77.6)
```

```
##   Smoking Status (%)
##      1                                                  3216 (51.4)
##      2                                                  1349 (21.6)
##      3                                                  1686 (27.0)
##   Hypertension Status = 1 (%)                           3239 (51.9)
##   Sex = 2 (%)                                           3234 (51.7)
##   Health Insurance Coverage = 2 (%)                     1299 (20.8)
##                                                      Stratified by BloodLeadQuartile
##                                                       Q3
##   n                                                    5967
##   Blood Lead Level (mean (SD))                         1.78 (0.23)
##   Average Systolic Blood Pressure (mean (SD))        125.78 (18.77)
##   Average Diastolic Blood Pressure (mean (SD))        70.82 (13.51)
##   Education level (%)
##      1                                                  655 (11.0)
##      2                                                  934 (15.7)
##      3                                                 1426 (23.9)
##      4                                                 1662 (27.9)
##      5                                                 1284 (21.5)
##      7                                                    3 ( 0.1)
##      9                                                    3 ( 0.1)
##   Age (mean (SD))                                      53.74 (16.06)
##   Race/Ethnicity (%)
##      1                                                 1014 (17.0)
##      2                                                  403 ( 6.8)
##      3                                                 3077 (51.6)
##      4                                                 1124 (18.8)
##      5                                                  349 ( 5.8)
##   Ratio of Family Income to Poverty Level (mean (SD))   2.72 (1.64)
##   BMI (mean (SD))                                      28.65 (6.02)
##   Alcohol Usage = 1 (%)                                 4569 (76.6)
##   Smoking Status (%)
##      1                                                  2503 (41.9)
##      2                                                  1544 (25.9)
##      3                                                  1920 (32.2)
##   Hypertension Status = 1 (%)                           3522 (59.1)
##   Sex = 2 (%)                                           2373 (39.8)
##   Health Insurance Coverage = 2 (%)                     1278 (21.4)
##                                                      Stratified by BloodLeadQuartile
##                                                       Q4             p
##   n                                                    6080
##   Blood Lead Level (mean (SD))                         3.87 (2.65)  <0.001
##   Average Systolic Blood Pressure (mean (SD))        129.46 (20.38) <0.001
##   Average Diastolic Blood Pressure (mean (SD))        70.63 (14.41) <0.001
##   Education level (%)                                               <0.001
##      1                                                 1061 (17.5)
##      2                                                 1207 (19.9)
##      3                                                 1513 (24.9)
##      4                                                 1370 (22.5)
##      5                                                  922 (15.2)
##      7                                                    2 ( 0.0)
##      9                                                    5 ( 0.1)
##   Age (mean (SD))                                      57.80 (16.15) <0.001
##   Race/Ethnicity (%)                                                 <0.001
```

```
##      1                                                    1181 (19.4)
##      2                                                     294 ( 4.8)
##      3                                                    2936 (48.3)
##      4                                                    1375 (22.6)
##      5                                                     294 ( 4.8)
##   Ratio of Family Income to Poverty Level (mean (SD))    2.36 (1.56)  <0.001
##   BMI (mean (SD))                                       27.73 (5.41)  <0.001
##   Alcohol Usage = 1 (%)                                 4473 (73.6)   <0.001
##   Smoking Status (%)                                                  <0.001
##      1                                                    1973 (32.5)
##      2                                                    1995 (32.8)
##      3                                                    2112 (34.7)
##   Hypertension Status = 1 (%)                           4014 (66.2)   <0.001
##   Sex = 2 (%)                                           1763 (29.0)   <0.001
##   Health Insurance Coverage = 2 (%)                     1403 (23.1)   <0.001
##                                                      Stratified by BloodLeadQuartile
##                                                       test
##   n
##   Blood Lead Level (mean (SD))
##   Average Systolic Blood Pressure (mean (SD))
##   Average Diastolic Blood Pressure (mean (SD))
##   Education level (%)
##      1
##      2
##      3
##      4
##      5
##      7
##      9
##   Age (mean (SD))
##   Race/Ethnicity (%)
##      1
##      2
##      3
##      4
##      5
##   Ratio of Family Income to Poverty Level (mean (SD))
##   BMI (mean (SD))
##   Alcohol Usage = 1 (%)
##   Smoking Status (%)
##      1
##      2
##      3
##   Hypertension Status = 1 (%)
##   Sex = 2 (%)
##   Health Insurance Coverage = 2 (%)
```

The table shows various parameters measured in 4 quantiles (Q1, Q2, Q3, Q4) and their corresponding statistics (mean and standard deviation (SD)) for different groups or categories, as well as p-values. In summary, these results indicate strong associations between the listed factors (Blood Lead Level, Blood Pressure, Education, Age, Race/Ethnicity, Income, BMI, Alcohol Usage, Smoking Status, Hypertension Status, Sex, and Health Insurance Coverage) and the outcome being studied. The p-values less than 0.001 for all these factors suggest that they are statistically significant in their influence on the outcome.