STATA code

New Combined Variables

A.1 Levels of Exercise

generate at_least_mod =

.

replace atleast_mod = 1 if Vigorousrecreationalactivities == 2 & Moderaterecreationalactivities == 2 replace atleast_mod = 2 if Moderaterecreationalactivities == 1 & Vigorousrecreationalactivities == 2 replace atleast_mod = 3 if Vigorousrecreationalactivities == 1 & Moderaterecreationalactivities == 2 replace atleast_mod = 4 if Vigorousrecreationalactivities == 1 & Moderaterecreationalactivities == 1

label define level_of_exercise 1 "not Moderate or Vigorous" 2 "Only Moderate" 3 "Only Vigorous" 4
"Moderate and Vigorous" label values

atleast_mod level_of_exercise label variable

atleast_mod "At least moderate exercise"

```
2 . tabulate atleast_mod
```

At least moderate exercise	Freq.	Percent	Cum.
not Moderate or Vigorous	3,120	53.28	53.28
Only Moderate	1,302	22.23	75.51
Only Vigorous	428	7.31	82.82
Moderate and Vigorous	1,006	17.18	100.00
Total	5,856	100.00	

A.2 Arthritis and Gout generate

combined_gout_and_arthritis = .

replace combined_gout_and_arthritis = 1 if arthritis == 2 & gout == 2

replace combined_gout_and_arthritis = 2 if arthritis == 1 & gout == 2

replace combined_gout_and_arthritis = 3 if gout == 1 & arthritis == 2

replace combined_gout_and_arthritis = 4 if gout == 1 & arthritis == 1

label define gout_arthritis 1 "no gout or arthritis " 2 "Only Arthritis" 3 "Only Gout" 4 "Gout and Arthritis" label values combined_gout_and_arthritis gout_arthritis label variable combined_gout_and_arthritis "Combined gout and arthritis"

```
3 . tabulate combined_gout_and_arthritis
```

Combined gout and arthritis	Freq.	Percent	Cum.
no gout or arthritis	**3,727**	**67.21**	**67.21**
Only Arthritis	**1,481**	**26.71**	**93.92**
Only Gout	**126**	**2.27**	**96.19**
Gout and Arthritis	**211**	**3.81**	**100.00**
Total	**5,545**	**100.00**	

Descriptive Statistics

Table 1

dtable Ageinyearsatscreening i.Gender BodyMassIndexkgm2 i.atleast_mod i.combined_gout_and_arthritis i.Atleastonecomorbidity i.trouble_sleeping, by (NSAID)

```
5 . dtable Ageinyearsatscreening i.Gender BodyMassIndexkgm2 i.atleast_mod i.combined_gout_and_arthritis i.Atleastonecomorbidit
  > y i.trouble_sleeping, by (NSAID)
```

	NSAID		
	No	Yes	Total
N	5,471 (93.6%)	375 (6.4%)	5,846 (100.0%)
Age in years at screening	49.374 (18.886)	57.176 (15.553)	49.875 (18.786)
Gender			
Male	2,685 (49.1%)	149 (39.7%)	2,834 (48.5%)
Female	2,786 (50.9%)	226 (60.3%)	3,012 (51.5%)
Body Mass Index (kg/m**2)	29.531 (7.387)	31.985 (7.875)	29.691 (7.443)
At least moderate exercise			
not Moderate or Vigorous	2,860 (52.3%)	254 (67.7%)	3,114 (53.3%)
Only Moderate	1,219 (22.3%)	81 (21.6%)	1,300 (22.2%)
Only Vigorous	412 (7.5%)	14 (3.7%)	426 (7.3%)
Moderate and Vigorous	980 (17.9%)	26 (6.9%)	1,006 (17.2%)
Combined gout and arthritis			
no gout or arthritis	3,618 (70.0%)	103 (28.3%)	3,721 (67.2%)
Only Arthritis	1,248 (24.1%)	231 (63.5%)	1,479 (26.7%)
Only Gout	119 (2.3%)	7 (1.9%)	126 (2.3%)
Gout and Arthritis	186 (3.6%)	23 (6.3%)	209 (3.8%)
At least one comorbidity			
No	2,388 (43.6%)	47 (12.5%)	2,435 (41.7%)
Yes	3,083 (56.4%)	328 (87.5%)	3,411 (58.3%)
Ever told doctor had trouble sleeping?			
Yes	1,388 (25.4%)	188 (50.3%)	1,576 (27.0%)
No	4,079 (74.6%)	186 (49.7%)	4,265 (73.0%)

Modeling Unadjusted

1.**logistic NSAID**

atleast_mod

```
2 . logistic NSAID i.atleast_mod

Logistic regression                                     Number of obs =  5,846
                                                        LR chi2(3)    =  54.36
                                                        Prob > chi2   = 0.0000
Log likelihood = -1365.497                              Pseudo R2     = 0.0195

------------------------------------------------------------------------------
        NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
--------------+---------------------------------------------------------------
  atleast_mod |
  Only Moder~e |    .748193   .0988427    -2.20   0.028     .5775141    .9693144
  Only Vigorous |    .382616   .1069563    -3.44   0.001      .221217     .661771
Moderate and~s |   .2987305   .0624973    -5.78   0.000      .198244    .4501518
         _cons |   .0888112   .0058147   -36.98   0.000     .0781155    .1009713
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

1. logistic NSAID Ageinyearsatscreening

```
2 . logistic NSAID Ageinyearsatscreening

Logistic regression                                     Number of obs =  5,846
                                                        LR chi2(1)    =  61.96
                                                        Prob > chi2   = 0.0000
Log likelihood = -1361.6981                             Pseudo R2     = 0.0222

------------------------------------------------------------------------------
        NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
--------------+---------------------------------------------------------------
Ageinyearsat~g |   1.023362   .0030887     7.65   0.000     1.017326    1.029433
         _cons |   .0199946   .0035859   -21.81   0.000     .0140688    .0284164
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

2. logistic NSAID Gender

```
3 . logistic NSAID Gender

Logistic regression                                     Number of obs =  5,846
                                                        LR chi2(1)    =  12.37
                                                        Prob > chi2   = 0.0004
Log likelihood = -1386.493                              Pseudo R2     = 0.0044

------------------------------------------------------------------------------
       NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Gender |   1.461791   .1592451     3.49   0.000     1.180747     1.80973
       _cons |   .0554935   .0046706   -34.35   0.000     .0470544    .0654461
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

4.logistic NSAID BodyMassIndexkgm2

```
Logistic regression                                     Number of obs =  5,425
                                                        LR chi2(1)    =  32.16
                                                        Prob > chi2   = 0.0000
Log likelihood = -1289.6823                             Pseudo R2     = 0.0123

------------------------------------------------------------------------------
        NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
--------------+---------------------------------------------------------------
BodyMassIndex~m2 |   1.038538   .0066194     5.93   0.000     1.025645    1.051593
        _cons |    .021819   .0045727   -18.25   0.000     .0144692    .0329021
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

5. logistic NSAID combined_gout_and_arthritis

```
5 . logistic NSAID combined_gout_and_arthritis

Logistic regression                                     Number of obs =  5,535
                                                        LR chi2(1)    = 111.09
                                                        Prob > chi2   = 0.0000
Log likelihood = -1286.9132                             Pseudo R2     = 0.0414

------------------------------------------------------------------------------
        NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
--------------+---------------------------------------------------------------
combined_gout~s |   1.889315   .1058224    11.36   0.000     1.692886    2.108536
        _cons |   .0254875   .0029125   -32.11   0.000     .0203732    .0318858
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

6.logistic NSAID Atleastonecomorbidity

```
6 . logistic NSAID Atleastonecomorbidity

Logistic regression                                     Number of obs =  5,846
                                                        LR chi2(1)    = 161.61
                                                        Prob > chi2   = 0.0000
Log likelihood = -1311.8702                             Pseudo R2     = 0.0580

------------------------------------------------------------------------------
        NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
--------------+---------------------------------------------------------------
Atleastonecom~y |   5.405507   .8558555    10.66   0.000     3.963378    7.372375
        _cons |   .0196818    .002899   -26.67   0.000     .0147465    .0262688
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

7.logistic NSAID trouble_sleeping

```
4 . logistic NSAID trouble_sleeping

Logistic regression                                     Number of obs =  5,841
                                                        LR chi2(1)    =  98.21
                                                        Prob > chi2   = 0.0000
Log likelihood = -1340.5583                             Pseudo R2     = 0.0353

------------------------------------------------------------------------------
        NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
--------------+---------------------------------------------------------------
trouble_sleep~g |   .3366595   .0363547   -10.08   0.000      .272441    .4160152
        _cons |   .4023255   .0694288    -5.28   0.000     .2868711    .5642457
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

Adjusted

logistic NSAID i.atleast_mod i.Gender BodyMassIndexkgm2 Ageinyearsatscreening i.combined_gout_and_arthritis i.Atleastonecomorbidity i.trouble_sleeping

```
2 . logistic NSAID i.atleast_mod i.Gender BodyMassIndexkgm2 Ageinyearsatscreening i.combined_gout_and_arthritis i.Atleastoneco
> morbidity i.trouble_sleeping

Logistic regression                                     Number of obs =  5,145
                                                        LR chi2(11)   = 300.55
                                                        Prob > chi2   = 0.0000
Log likelihood = -1107.2505                             Pseudo R2     = 0.1195

------------------------------------------------------------------------------
       NSAID | Odds ratio   Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
  atleast_mod |
 Only Moderate |   .760945   .1090436    -1.91   0.057     .5746135    1.007699
 Only Vigorous |   .7367289   .2160868    -1.04   0.298     .4146154    1.309092
Moderate and Vigorous |   .5062747   .1134909    -3.04   0.002     .3262674    .7855952
              |
       Gender |
       Female |   1.126903   .1353883     0.99   0.320     .8904744    1.426105
BodyMassIndexkgm2 |   1.014508   .0073901     1.98   0.048     1.000127    1.029097
Ageinyearsatscreening |   .9977981   .0042015    -0.52   0.601     .9895973    1.006067
              |
combined_gout_and_arthritis |
 Only Arthritis |   3.89333   .6297433     8.40   0.000     2.835567    5.345674
      Only Gout |   1.298742   .5794323     0.59   0.558     .5417019    3.113763
Gout and Arthritis |   2.687076   .7369995     3.60   0.000     1.569698    4.599852
              |
Atleastonecomorbidity |
            Yes |   1.750032   .3722645     2.63   0.009     1.153399    2.655293
              |
trouble_sleeping |
             No |   .5581071   .0668639    -4.87   0.000     .4413057    .7058226
          _cons |   .0281218    .010441    -9.62   0.000     .0135835    .0582205
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

Sensitivity Analysis

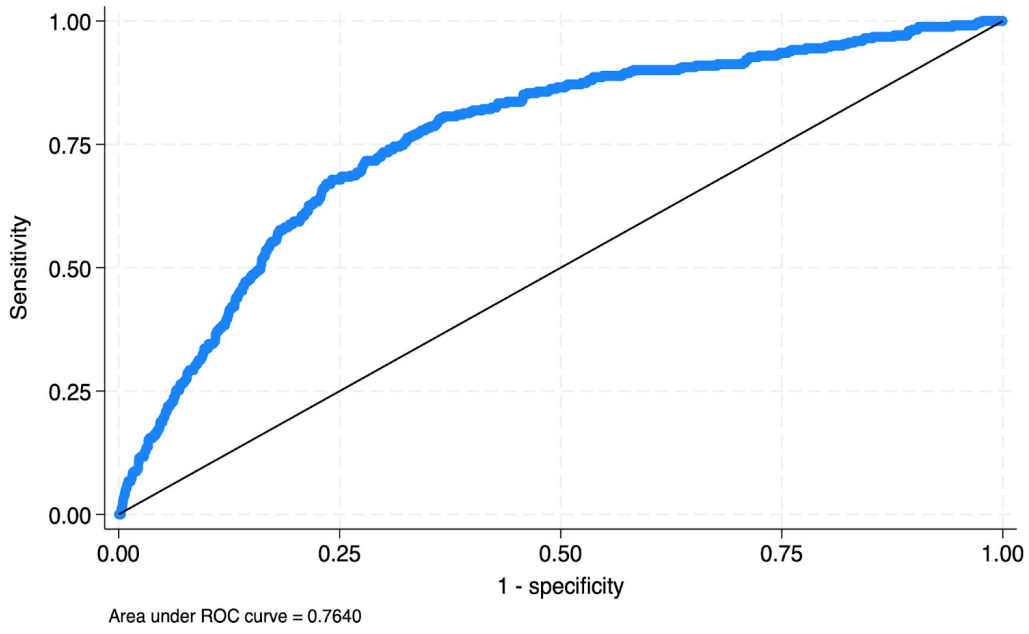
Area Under the Curve

Lroc

```
13 . lroc

   Logistic model for NSAID

   Number of observations =      5145
   Area under ROC curve   =    0.7640
```



Goodness of fit

estat gof

```
14 . estat gof

   Goodness-of-fit test after logistic model
   Variable: NSAID

         Number of observations =   5,145
   Number of covariate patterns =   5,071
             Pearson chi2(5059) = 5008.11
                    Prob > chi2 =  0.6918
```

Multicollinearity

vif, uncentered

```
9 . vif, uncentered

    Variable |       VIF       1/VIF
-------------+----------------------
 atleast_mod |
           2 |      1.41    0.709611
           3 |      1.13    0.882457
           4 |      1.29    0.772941
    1.Gender |      2.08    0.481075
BodyMassIn~2 |      8.56    0.116782
Ageinyears~g |      9.22    0.108493
combined_g~s |
           2 |      2.11    0.473696
           3 |      1.10    0.908538
           4 |      1.17    0.852503
1.Atleasto~y |      4.05    0.246649
2.trouble_~g |      3.34    0.299080
-------------+----------------------
    Mean VIF |      3.23
```

Model Adjusted to exclude Multicollinear variables

logistic NSAID i.atleast_mod i.Gender i.combined_gout_and_arthritis i.Atleastonecomorbidity i.trouble_sleeping

```
10 . logistic NSAID i.atleast_mod i.Gender  i.combined_gout_and_arthritis i.Atleastonecomorbidity i.trouble_sleeping

Logistic regression                                     Number of obs =  5,530
                                                        LR chi2(9)    = 320.10
                                                        Prob > chi2   = 0.0000
Log likelihood = -1179.41                               Pseudo R2     = 0.1195
```

NSAID	Odds ratio	Std. err.	z	P>|z|	[95% conf.	interval]
atleast_mod						
Only Moderate	.7910378	.1096459	-1.69	0.091	.6028539	1.037964
Only Vigorous	.7178137	.2077826	-1.15	0.252	.407022	1.265918
Moderate and Vigorous	.5029818	.1084994	-3.19	0.001	.3295623	.7676566
Gender						
Female	1.147779	.1329078	1.19	0.234	.91473	1.440203
combined_gout_and_arthritis						
Only Arthritis	3.867344	.5881246	8.89	0.000	2.87056	5.210254
Only Gout	1.457999	.6044268	0.91	0.363	.6469697	3.28572
Gout and Arthritis	2.629854	.6845381	3.71	0.000	1.578949	4.380213
Atleastonecomorbidity						
Yes	1.785778	.3648324	2.84	0.005	1.196542	2.665182
trouble_sleeping						
No	.5321758	.0613782	-5.47	0.000	.4245044	.6671568
_cons	.0380184	.0074763	-16.63	0.000	.0258586	.0558961

	NSAID used in last 30 days		
Sample Characteristic	**No n(%)**	**Yes n(%)**	**Total n(%)**
Number of participants - n (%)	4,803 (93.4%)	342 (6.6%)	5,145 (100.0%)
Age in years at screening - Mean (SD)	50.754 (17.752)*	57.637 (14.558)*	51.211 (17.640)*
Sex			
Male - n (%)	2,343 (48.8%)	138 (40.4%)	2,481 (48.2%)
Female - n (%)	2,460 (51.2%)	204 (59.6%)	2,664 (51.8%)
Body mass index (kg/m^2) - Mean (SD)	29.692 (7.342)*	31.961 (7.747)*	29.842 (7.390)*
Level of recreational exercise			
Not moderate or vigorous - n (%)	2,515 (52.4%)	230 (67.3%)	2,745 (53.4%)
Only moderate - n (%)	1,121 (23.3%)	73 (21.3%)	1,194 (23.2%)
Only vigorous - n (%)	333 (6.9%)	14 (4.1%)	347 (6.7%)
Moderate and vigorous - n (%)	834 (17.4%)	25 (7.3%)	859 (16.7%)
Combined gout and arthritis			
No gout or Arthritis - n (%)	3,369 (70.1%)	99 (28.9%)	3,468 (67.4%)
Only arthritis - n (%)	1,152 (24.0%)	215 (62.9%)	1,367 (26.6%)
Only gout - n (%)	112 (2.3%)	6 (1.8%)	118 (2.3%)
Gout and Arthritis - n (%)	170 (3.5%)	22 (6.4%)	192 (3.7%)
At least one comorbidity			
No - n (%)	2,001 (41.7%)	42 (12.3%)	2,043 (39.7%)
Yes - n (%)	2,802 (58.3%)	300 (87.7%)	3,102 (60.3%)
Ever told doctor had trouble sleeping?			
No - n (%)	3,540 (73.7%)	170 (49.7%)	3,710 (72.1%)
Yes - n (%)	1,263 (26.3%)	172 (50.3%)	1,435 (27.9%)

*Mean (standard deviation)

Table 2. Unadjusted and adjusted models			
Variables	Odds ratio (95 %CI)	Standard error	P value
2.1 Unadjusted model **atleast_mod***			
Only moderate	0.74 (0.57, 0.96)	0.098	0.028
Only vigorous	0.38 (0.22, 0.66)	0.106	0.001
Moderate and vigorous	0.29 (0.19, 0.45)	0.062	0.000
Age at years at screening	1.02 (1.01, 1.02)	0.003	0.000
Gender			
Female	1.46 (1.18, 1.80)	0.159	0.000
BodyMassIndexkgm2	1.04 (1.02, 1.05)	0.006	0.000
Combined arthritis and gout	1.88 (1.69, 2.11)	0.105	0.000
Trouble sleeping			
No	0.34 (0.27, 0.41)	0.036	0.000
At least one comorbidity			
Yes	5.40 (3.96, 7.37)	0.855	0.000
2.2 Adjusted model **atlesat_mod**			
Only moderate	0.76 (0.57, 1.00)	0.109	0.057
Only vigorous	0.73 (0.41, 1.30)	0.216	0.298

Moderate and vigorous	0.50 (0.32, 0.78)	0.113	0.002
Gender			
Female	1.12 (0.89, 1.42)	0.135	0.320
BodyMassIndexkgm2	1.01 (1.00, 1.02)	0.007	0.048
Age at years at screening	0.99 (0.98, 1.00)	0.004	0.601
Combined gout and arthritis			
Only arthritis	3.89 (2.83, 5.34)	0.629	0.000
Only gout	1.29 (0.54, 3.11)	0.579	0.558
Gout and arthritis	2.68 (1.56, 4.59)	0.736	0.000
Trouble sleeping			
No	0.55 (0.44, 0.70)	0.066	0.000
At least one comorbidity			
Yes	1.75 (1.15, 2.65)	0.372	0.009

*atleast_mod (at least moderate exercise): represents the level of recreational exercise