Task 1 Open Log and Read in Data

- Use the **rm** function to remove all active objects in the memory (global environment) and the **setwd** function to create a working directory and
- Use the **sink** function to divert the codes and results to a log file and use the **read.dta** function to load the external Stata data file **gsscum7212Teach.dta** into R.

```
> rm(list=ls(all = TRUE))

> setwd("/Users/burrisfaculty/Desktop/DSCode/SOC686")

> library(foreign)

> mygss <- read.dta("gsscum7212teach.dta")
```

Task 2 Explore Data

- Keep six variables, include mental health (**mntlhlth**), age (**age**), sex (**sex**), race (**race**), education (**educ**), and income (**inc1k**)
- Explore each of the six variables using the **table** and the **summary** function.

```
> usevar <- c("mntlhlth",'age','sex','race','educ','inc1k')

> useddta <- mygss[usevar]
```

Table and summary for mntlhlth

```
> table(useddta$mntlhlth, useNA = c("ifany"))

   0    1    2    3    4    5    6    7    8   10   12   14   15   16   18   20   21   25
 401   34   62   37   29   39    6   19    2   35    3    4   22    1    2   21    2    9 7   30 <NA>  1   23 4954

> summary(useddta$mntlhlth)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
   0.00    0.00    0.00    3.98    5.00   30.00    4954
```

Table and summary for age

```
> table(useddta$age, useNA = c("ifany"))

  18   19   20   21   22   23   24   25   26   27   28   29   30   31   32   33   34   35
  27   92   91   93   80  119  111  123  114  125  151  124  118  117  143  126  136  114
  36   37   38   39   40   41   42   43   44   45   46   47   48   49   50   51   52   53
 131  107  121   91  102  111   95  123  115   83  112   89   99  117   99   91   98   76
  54   55   56   57   58   59   60   61   62   63   64   65   66   67   68   69   70   71
  80   80   73   72   74   69   81   70   77   78   71   74   58   72   67   71   62   49
  72   73   74   75   76   77   78   79   80   81   82   83   84   85   86   87   88   89
  58   49   54   37   37   43   46   25   21   26    9   23   22   21   16   14   10   35
<NA>
  18

> summary(useddta$age)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
  18.00   31.00   43.00   45.57   59.00   89.00      18
```

Table and summary for sex

```
> table(useddta$sex, useNA = c("ifany"))

  male female
  2480   3226

> summary(useddta$sex)
  male female
  2480   3226
```

Table and summary for race

```
> table(useddta$race, useNA = c("ifany"))

  iap white black other
    0  4644   770   292

> summary(useddta$race)
  iap white black other
    0  4644   770   292
```

Table and summary for educ

```
> table(useddta$educ, useNA = c("ifany"))

   0    1    2    3    4    5    6    7    8    9   10   11   12   13   14   15   16   17
  20    7   15   25   33   30   85   90  251  213  216  350 1817  479  580  249  679  167
  18   19   20 <NA>
 189   91  102   18

> summary(useddta$educ)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
    0.0    12.0    12.0    12.7    15.0    20.0      18
```

Table and summary for inc1k

```
> table(useddta$inc1k, useNA = c("ifany"))

0.245000049471855  0.25900000333786 0.267749965190887 0.284249991178513 0.301900029182434
                6                 3                 2                 7                 6
0.312849968671799 0.345000028610229 0.363000065088272 0.382000058889389 0.444000065326691
                1                 1                 4                 1                 1
0.482999950647354 0.510000050067902 0.550000071525574 0.602999866008759 0.904999792575836
                2                 1                 2                 5                 3
0.962999880313873 0.980000197887421  1.03600001335144  1.07099986076355   1.1120001077652
                2                 1                 2                 1                 2
 1.13700008392334  1.20760011672974  1.23399996757507  1.25139987468719  1.31000018119812
                4                 4                 4                 2                 4
 1.32999980449677  1.37799978256226  1.45000004768372  1.52800023555756  1.57200014591217
                3                 4                 3                 3                 3
 1.67099976539612   1.7150000333786  1.81299960613251  1.92999982833862  1.98974978923798
                3                 2                 3                 2                 3
 2.00000023841858  2.11100053787231  2.11329984664917  2.18995046615601  2.20100021362305
                2                 5                 3                 2                 4
 2.20500040054321  2.27200055122375  2.32699966430664  2.40974974632263  2.41100025177002
                1                 4                 3                 3                 9
 2.53800058364868  2.55825018882751  2.67400002479553  2.69500041007996  2.70700025558472
                4                 5                 1                 1                13
```

2.7171003818512	2.75099968910217	2.81564974784851	2.84899997711182	2.92499923706055
3	5	1	3	3
2.9452497959137	2.99200034141541	3.02099895477295	3.09999847412109	3.10499882698059
2	1	4	1	4
3.12675023078918	3.24699878692627	3.26300096511841	3.31584334373474	3.32883048057556
8	2	3	1	1
3.36700057983398	3.37264037132263	3.37800002098083	3.43799901008606	3.44135165214539
4	1	2	5	4
3.48074817657471	3.50000143051147	3.5369987487793	3.56700110435486	3.61899828910828
3	3	2	5	9
3.65699911117554	3.67500066757202	3.69500041007996	3.69525074958801	3.74912452697754
3	2	5	8	1
3.75999879837036	3.78900098800659	3.85199952125549	3.88499999046326	3.92470073699951
5	3	13	3	4
3.96213483810425	3.9760000705719	3.98800015449524	4.01625156402588	4.06704807281494
1	2	4	3	3
4.0740008354187	4.11047840118408	4.17499876022339	4.20200109481812	4.21999979019165
10	1	4	8	12
4.2637505531311	4.32199907302856	4.32300090789795	4.34300088882446	4.34620380401611
6	5	2	3	1
4.41000080108643	4.44700145721436	4.47800064086914	4.50000047683716	4.5285005569458
4	14	3	9	1
4.57300615310669	4.58700037002563	4.59599924087524	4.66200017929077	4.69275188446045
1	6	3	4	4
4.71300172805786	4.74999809265137	4.81950187683105	4.87900114059448	4.93499755859375
6	6	5	3	15
4.95199823379517	4.96600151062012	4.9870023727417	5.10199928283691	5.10900163650513
7	1	8	4	2
5.11199855804443	5.11650037765503	5.16700172424316	5.24200248718262	5.2870020866394
6	7	5	6	5
5.30799865722656	5.42499923706055	5.43199872970581	5.43420076370239	5.43800067901611
6	10	2	6	3
5.49999809265137	5.51250123977661	5.60599994659424	5.63130235671997	5.7300009727478
5	7	2	8	4
5.76599931716919	5.80599880218506	5.8274998664856	5.89500093460083	5.89644050598145
1	3	7	4	1
5.98500204086304	6.02437734603882	6.02999925613403	6.0529990196228	6.05927133560181
9	10	4	5	1
6.15190982818604	6.20099973678589	6.23559617996216	6.24800157546997	6.26700258255005
1	7	1	3	3
6.27299976348877	6.30417394638062	6.33300161361694	6.39562606811523	6.45313119888306
3	1	6	19	1
6.49999856948853	6.52499723434448	6.62500190734863	6.63100051879883	6.65299940109253
4	9	1	9	6
6.73749876022339	6.74100160598755	6.74680233001709	6.7927508354187	6.79427337646484
8	10	1	3	1
6.7979998588562	6.86100101470947	6.87600088119507	6.9580020904541	7.03912782669067
4	3	6	2	6
7.03949069976807	7.04162549972534	7.0740008354187	7.11407232284546	7.11829328536987
1	1	3	1	1
7.12249708175659	7.13000011444092	7.15299940109253	7.23799991607666	7.36312437057495
6	10	3	4	6
7.38400220870972	7.48100280761719	7.49999761581421	7.52099800109863	7.64399862289429
3	14	8	2	2
7.65081071853638	7.71156692504883	7.75099802017212	7.78200244903564	7.81687259674072
1	1	8	11	17
7.83600234985352	7.83913421630859	7.86015462875366	7.88833808898926	7.91699934005737
7	1	1	1	3
7.96249914169312	7.9840030670166	8.12199974060059	8.14200115203857	8.15599727630615
8	7	12	7	13
8.25400257110596	8.2664966583252	8.29364585876465	8.30224704742432	8.30799674987793
8	1	1	9	4
8.31664657592773	8.34899711608887	8.41749668121338	8.43902206420898	8.5200023651123
1	5	7	1	3
8.59500217437744	8.60337543487549	8.63600063323975	8.66699886322021	8.68500423431396
15	8	7	4	5
8.69449234008789	8.70187473297119	8.70726299285889	8.84299945831299	8.87659358978271
1	5	1	8	1
8.99999713897705	9.04199695587158	9.06238746643066	9.07034301757812	9.14223098754883
6	7	1	1	1
9.14299869537354	9.16699981689453	9.17300033569336	9.18749809265137	9.23812294006348
8	3	17	6	11
9.24072170257568	9.3040189743042	9.40099716186523	9.47300434112549	9.5
1	1	10	12	4
9.5033073425293	9.62625789642334	9.64777278900146	9.71249580383301	9.75203418731689
1	1	1	3	1

9.754620552062991	9.81174850463867	9.81900215148926	9.85030937194824	9.86153221130371
9.90500164031982	9.95200347900391	9.96899795532227	9.97226810455322	9.98000431060791
10.0050001144409	10.0112991333008	10.040623664856	10.0774421691895	10.1676263809204
10.1768712997437	10.2203073501587	10.2229976654053	10.2312297821045	10.2455148696899
10.3233404159546	10.387354850769	10.3965711593628	10.4124975204468	10.4359979629517
10.4838199615479	10.504997253418	10.5187711715698	10.5940046310425	10.6593713760376
10.7324876785278	10.7467136383057	10.8060026168823	10.8069925308228	10.8080015182495
10.816065788269	10.8183240890503	10.8472929000854	10.8500032424927	10.8570003509521
10.86243724823	10.892219543457	10.9157829284668	10.9222602844238	10.9857225418091
11.0075044631958	11.0141201019287	11.0360431671143	11.0463190078735	11.0499439239502
11.0514621734619	11.1030035018921	11.111011505127	11.1368961334229	11.1959991455078
11.2050037384033	11.2282056808472	11.2499961853027	11.3173589706421	11.3212461471558
11.3290014266968	11.3793725967407	11.3844528198242	11.4659976959229	11.4900035858154
11.5382747650146	11.6375017166138	11.6599760055542	11.6940622329712	11.7184782028198
11.7318754196167	11.744647026062	11.7609996795654	11.7724018096924	11.7810049057007
11.793999671936	11.8189172744751	11.8489255905151	11.875997543335	11.9353685379028
12.063362121582	12.0806198120117	12.1227216720581	12.1687984466553	12.174464225769
12.1969966888428	12.22900390625	12.3024988174438	12.3177843093872	12.3274793624878
12.3418779373169	12.3565406799316	12.3810052871704	12.4090557098389	12.4149980545044
12.467999458313	12.5199966430664	12.5951814651489	12.71812915802	12.718165397644
12.7560033798218	12.7729969024658	12.7790040969849	12.8147125244141	12.8245306015015
12.8307447433472	12.8385782241821	12.8903274536133	12.9051609039307	12.9180040359497
12.9335851669312	13.008113861084	13.0627012252808	13.123610496521	13.1279163360596
13.2236642837524	13.2319650650024	13.242000579834	13.2690029144287	13.296124458313
13.3172149658203	13.3764915466309	13.4021701812744	13.475004196167	13.4937143325806
13.5018749237061	13.5369958877563	13.5569696426392	13.5629959106445	13.5699949264526
13.5790061950684	13.5939970016479	13.5949954986572	13.6877126693726	13.7353763580322
13.7500028610229	13.7579507827759	13.7665882110596	13.8759098052979	13.8913879394531
13.9312152862549	13.9367027282715	13.942193031311	13.9433364868164	13.9802465438843
14.0149936676025	14.1064586639404	14.1081266403198	14.1310052871704	14.1678438186646
14.2201480865479	14.2450008392334	14.3226051330566	14.3249959945679	14.3402500152588
14.4150056838989	14.4459981918335	14.4520053863525	14.4928455352783	14.5150051116943
14.5333576202393	14.5497217178345	14.5613956451416	14.6274385452271	14.6361169815063
14.6410036087036	14.7262554168701	14.7325210571289	14.7380018234253	14.7919321060181
14.8256988525391	14.842604637146	14.8603801727295	14.8783044815063	14.8802194595337
14.9133644104004	14.9317789077759	14.9434328079224	14.9535102844238	14.9568204879761
14.9662227630615	14.9670658111572	14.9963836669922	15.0072135925293	15.0435676574707
15.0733232498169	15.0750045776367	15.1320009231567	15.1443433761597	15.1513795852661

15.1577243804932	15.2433109283447	15.2789974212646	15.3102397918701	15.371994972229
1	1	6	1	2
15.3933115005493	15.3972463607788	15.4001235961914	15.4060001373291	15.4105110168457
1	1	1	11	1
15.4288196563721	15.4327783584595	15.4431867599487	15.5047388076782	15.5148258209229
1	1	1	1	1
15.5412015914917	15.562557220459	15.5770502090454	15.6028003692627	15.6165409088135
1	1	1	1	1
15.6189994812012	15.6337518692017	15.6464157104492	15.6680068969727	15.681999206543
8	18	1	1	2
15.6861429214478	15.6934299468994	15.7363815307617	15.7455244064331	15.7537403106689
1	1	1	1	1
15.788649559021	15.7930011749268	15.7959833145142	15.8189430236816	15.8254156112671
1	12	1	1	1
15.8873558044434	15.8884925842285	15.9195852279663	15.9250059127808	15.9518337249756
1	1	1	10	1
15.9700231552124	15.9774570465088	16.0170631408691	16.0348987579346	16.0380020141602
1	1	1	1	8
16.0444889068604	16.0513916015625	16.0901050567627	16.1358375549316	16.16943359375
1	1	1	1	1
16.2212677001953	16.2288188934326	16.2349948883057	16.2500057220459	16.2839946746826
2	1	13	2	10
16.3238620758057	16.3466529846191	16.3629989624023	16.3729095458984	16.5113830566406
1	1	5	1	1
16.5267601013184	16.5409660339355	16.5630016326904	16.5729560852051	16.5770034790039
1	1	5	1	13
16.5806713104248	16.6045017242432	16.6329975128174	16.6653881072998	16.6734981536865
1	11	6	1	1
16.6759948730469	16.6890239715576	16.6940364837646	16.6967926025391	16.7022552490234
10	1	1	1	1
16.7030048370361	16.7045650482178	16.7278881072998	16.7489585876465	16.7590560913086
4	1	1	1	1
16.7656421661377	16.7711448669434	16.8059043884277	16.8350028991699	16.8415222167969
1	1	1	12	1
16.8420677185059	16.8458442687988	16.8572044372559	16.8624782562256	16.8728866577148
1	2	1	1	1
16.9031181335449	16.9279270172119	16.9358081817627	16.9552974700928	16.9650993347168
1	1	1	1	1
16.9738864898682	16.991231918335	16.9940032958984	17.022876739502	17.0359973907471
1	1	8	1	9
17.0379981994629	17.0463676452637	17.0941314697266	17.098518371582	17.1064758300781
11	1	1	1	1
17.1100482940674	17.1155815124512	17.1539993286133	17.1830291748047	17.2067584991455
1	1	8	1	13
17.2102546691895	17.2744312286377	17.3249340057373	17.334997177124	17.345516204834
1	2	1	16	1
17.3792285919189	17.3800563812256	17.3940010070801	17.3962249755859	17.4037418365479
1	1	7	1	13
17.4903964996338	17.4913806915283	17.5031795501709	17.5193099975586	17.5435199737549
1	1	1	1	1
17.5569438934326	17.5692863464355	17.5719528198242	17.5846424102783	17.6128883361816
1	1	1	1	1
17.7022228240967	17.7065296173096	17.7372379302979	17.7570056915283	17.764289855957
1	1	1	7	1
17.8056564331055	17.8290901184082	17.8494205474854	17.8696022033691	17.8839912414551
1	1	1	1	9
17.8909854888916	17.8934593200684	17.898868560791	17.9243221282959	17.9540042877197
1	1	1	1	15
18.0366535186768	18.0735893249512	18.0808982849121	18.0843296051025	18.0940074920654
1	1	1	1	4
18.1110496520996	18.170129776001	18.1758117675781	18.1794357299805	18.1984996795654
1	1	1	1	1
18.2695350646973	18.2870025634766	18.3176174163818	18.3214435577393	18.3350067138672
1	15	1	1	10
18.3517475128174	18.3606414794922	18.371955871582	18.3750038146973	18.416145324707
1	1	1	11	1
18.4482765197754	18.4589939117432	18.471004486084	18.4762535095215	18.4860553741455
1	14	8	19	1
18.4974632263184	18.504997253418	18.5451011657715	18.5601940155029	18.5874366760254
1	8	1	1	1
18.5899906158447	18.5986423492432	18.6467380523682	18.6473770141602	18.6654376983643
1	1	1	1	1
18.6657409667969	18.6704044342041	18.6958293914795	18.6988620758057	18.7081718444824
1	1	1	1	1
18.721076965332	18.7217178344727	18.7288970947266	18.7500038146973	18.759859085083
1	1	1	6	1

18.7699337005615	18.7825946807861	18.799259185791	18.826530456543	18.8509998321533
1	1	1	1	6
18.8752136230469	18.9088344573975	18.9326515197754	18.9469928741455	18.9510040283203
2	1	1	21	10
18.9881820678711	19.0156002044678	19.0461444854736	19.0488700866699	19.1110095977783
1	1	1	1	11
19.1276187896729	19.1623458862305	19.1666049957275	19.1779594421387	19.1947383880615
1	1	1	1	1
19.2011280059814	19.2078876495361	19.2405395507812	19.2615776062012	19.2746257781982
1	1	1	1	1
19.3010196685791	19.3048496246338	19.313024520874	19.3374462127686	19.3604011535645
1	1	1	1	1
19.4052257537842	19.4235572814941	19.4249992370605	19.4325981140137	19.4656314849854
1	1	7	1	1
19.4692344665527	19.508264541626	19.5323162078857	19.5475959777832	19.5869140625
1	1	1	1	1
19.5910053253174	19.6072673797607	19.6235046386719	19.6569938659668	19.6599578857422
13	1	23	9	1
19.6777782440186	19.6904468536377	19.7129936218262	19.7131080627441	19.746826171875
1	1	5	1	1
19.7629699707031	19.7801475524902	19.7810726165771	19.7929992675781	19.8027038574219
1	1	1	3	1
19.8089942932129	19.8459987640381	19.8551425933838	19.8573760986328	19.8640823364258
1	6	1	1	1
19.869176864624	19.8758678436279	19.9179916381836	19.9380054473877	19.9494915008545
1	1	1	13	1
19.9900016784668	20.0086154937744	20.0110015869141	20.0221118927002	20.0458030700684
1	1	12	1	1
20.0623645782471	20.0726623535156	20.0812568664551	20.0863914489746	20.0925807952881
1	1	8	1	1
20.1206321716309	20.1423473358154	20.1862678527832	20.2226295471191	20.2424068450928
1	1	1	1	1
20.3110332489014	20.335241317749	20.345308303833	20.3549938201904	20.3640403747559
1	20	1	10	1
20.3736763000488	20.378963470459	20.3900241851807	20.4072208404541	20.4086799621582
1	1	1	1	1
20.411678314209	20.4129428863525	20.4193305969238	20.4847869873047	20.4877948760986
1	1	1	1	1
20.502592086792	20.5069923400879	20.5407752990723	20.6013946533203	20.609058380127
1	5	1	1	1
20.6349983215332	20.6762866973877	20.6899375915527	20.7425098419189	20.7700042724609
8	1	1	1	8
20.7741451263428	20.8232555389404	20.8870410919189	20.9181365966797	20.9325866699219
1	1	1	1	1
20.9417304992676	20.9775505065918	20.9807510375977	20.9912986755371	21.0100040435791
1	1	1	1	20
21.0206069946289	21.0679893493652	21.0906867980957	21.0908889770508	21.1080303192139
1	9	1	1	1
21.1693572998047	21.2163276672363	21.2500019073486	21.298999786377	21.3061504364014
1	1	12	4	1
21.3187522888184	21.3319721221924	21.4025592803955	21.4383697509766	21.4469184875488
23	1	1	1	1
21.4923725128174	21.6119937896729	21.6126136779785	21.6150035858154	21.6427898406982
1	13	1	16	1
21.6589984893799	21.6689968109131	21.6776580810547	21.6932926177979	21.7069702148438
5	13	1	1	1
21.7339191436768	21.7655124664307	21.7931346893311	21.8101863861084	21.8915176391602
2	1	1	1	1
21.9368877410889	21.9657573699951	22.011157989502	22.0304164886475	22.0319900512695
1	1	1	1	4
22.0394725799561	22.0476722717285	22.0500049591064	22.0742645263672	22.1800479888916
1	1	17	1	1
22.1951160430908	22.1958332061768	22.205997467041	22.2578792572021	22.2925891876221
1	1	15	1	1
22.3486385345459	22.3920097351074	22.4174137115479	22.431999206543	22.4395523071289
1	24	1	9	1
22.5441856384277	22.5933647155762	22.6050033569336	22.6249103546143	22.6264209747314
1	1	8	1	1
22.6425018310547	22.7713718414307	22.777214050293	22.8018836975098	22.9189987182617
13	1	1	1	7
22.9658203125	22.9799957275391	23.035924911499	23.0743370056152	23.0836486816406
1	7	1	1	1
23.3099994659424	23.3379821777344	23.3859958648682	23.4032211303711	23.4637603759766
10	1	11	1	13
23.563009262085	23.5880107879639	23.6295051574707	23.6875820159912	23.7377853393555
26	12	1	1	1

23.7499904632568	23.8359203338623	23.9472007751465	24.001501083374	24.0383148193359
11	1	1	1	1
24.0975093841553	24.1210765838623	24.1390037536621	24.207010269165	24.2512836456299
20	1	10	6	1
24.3062725067139	24.3659896850586	24.3773555755615	24.3907032012939	24.3950061798096
1	18	1	1	8
24.4603748321533	24.5429992675781	24.5470027923584	24.5626449584961	24.5973148345947
1	10	5	1	1
24.6775550842285	24.6803550720215	24.6838855743408	24.719762802124	24.7441749572754
1	1	1	1	1
24.7658004760742	24.7895259857178	24.8300075531006	24.8619499206543	24.8790016174316
1	1	20	1	13
24.9012680053711	24.9026679992676	24.9076557159424	24.9192523956299	24.9370098114014
1	1	1	1	18
24.9987525939941	25.1022186279297	25.1756286621094	25.2174873352051	25.3855247497559
1	1	1	1	1
25.4090423583984	25.4429664611816	25.4617042541504	25.4650077819824	25.5109958648682
1	1	1	37	21
25.514087677002	25.5450077056885	25.5631866455078	25.5825042724609	25.5869922637939
1	9	1	34	7
25.6107940673828	25.6173667907715	25.6190032958984	25.6412220001221	25.6426639556885
1	1	9	1	1
25.6489753723145	25.6531581878662	25.7967758178711	25.8370056152344	25.8568477630615
1	1	1	22	1
25.8781127929688	26.0223693847656	26.0379333496094	26.1136817932129	26.1331634521484
1	1	1	1	1
26.1382732391357	26.1417388916016	26.202615737915	26.2186870574951	26.2270164489746
1	1	1	1	1
26.3845119476318	26.4109954833984	26.4839897155762	26.5379943847656	26.726526260376
1	11	11	12	1
26.7638416290283	26.8955631256104	26.9499950408936	27.0180358886719	27.0659008026123
1	1	8	1	1
27.1469917297363	27.1579971313477	27.1710033416748	27.1880073547363	27.3516654968262
1	11	23	23	1
27.4999923706055	27.5047912597656	27.5781517028809	27.6257171630859	27.7155456542969
13	1	1	1	1
27.7910308837891	27.7929916381836	27.8078117370605	27.9018249511719	28.0290107727051
1	36	1	1	9
28.0300025939941	28.1565113067627	28.3015365600586	28.3230018615723	28.4899883270264
12	23	1	13	17
28.6500053405762	28.7432460784912	28.8299980163574	28.9983959197998	29.0328750610352
18	1	9	1	1
29.2208156585693	29.3102951049805	29.377233505249	29.4020118713379	29.4524974822998
1	1	1	14	22
29.4750061035156	29.6023635864258	29.6143360137939	29.7988510131836	29.8067512512207
7	1	1	1	1
29.925012588501	29.9440536499023	30.149995803833	30.1614971160889	30.2814235687256
22	1	14	1	1
30.3802051544189	30.4580097198486	30.6559371948242	30.6709403991699	30.6760005950928
1	19	1	1	1
30.8410015106201	30.8632469177246	30.9091663360596	31.004997253418	31.0110607147217
32	1	1	29	1
31.1343631744385	31.1781902313232	31.2674903869629	31.2989940643311	31.3360004425049
1	1	35	12	9
31.364013671875	31.4041194915771	31.6605682373047	31.6679973602295	31.7129077911377
14	1	1	21	1
31.7424392700195	31.9319610595703	31.9431991577148	31.9510612487793	31.9796257019043
1	1	1	1	1
32.0175857543945	32.0702095031738	32.1000137329102	32.1555938720703	32.3958358764648
1	1	13	1	1
32.4999923706055	32.506160736084	32.5317802429199	32.5364303588867	32.6249847412109
11	1	1	1	32
32.6574211120605	32.7101936340332	32.760986328125	32.9048614501953	33.0160102844238
1	1	32	1	21
33.0244522094727	33.075008392334	33.1250114440918	33.1252632141113	33.2089881896973
1	9	13	1	18
33.2660102844238	33.4096870422363	33.4123954772949	33.7737693786621	33.8190498352051
7	1	1	1	1
33.8344421386719	33.9260063171387	34.0171089172363	34.0779914855957	34.2394065856934
1	11	1	21	1
34.3800086975098	34.413501739502	34.5543823242188	34.7036552429199	34.7879867553711
35	27	1	1	8
34.9650001525879	35.1210021972656	35.3273620605469	35.3700065612793	35.6509895324707
12	10	1	11	16
36.1140174865723	36.1462669372559	36.1669883728027	36.1889991760254	36.2548408508301
10	25	22	8	1

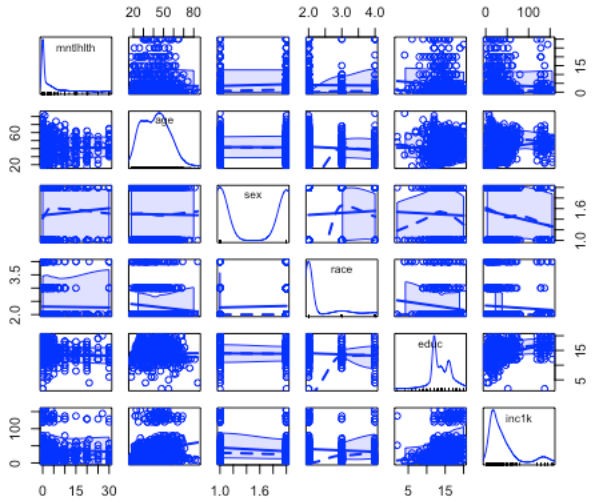
```
 [ reached getOption("max.print") -- omitted 135 entries ]
```

```
> summary(useddta$inc1k)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  0.245  12.481  22.605  30.279  37.226 162.607
```

Task 3 Clean Data

- Create a dummy variable for sex using male as the reference category (hint: For example, for the dummy variable of sex, we can create a new binary variable named **female**, with females coded as one and males coded as zero), and then create a dummy variable for race using blacks as the reference category (hint: For example, for the dummy variable of black, we can create a new binary variable named **nonblack**, with nonblacks recoded as one and other as zero).
- Drop missing cases and draw pairwise bivariate scatter plots of all variables.

```
#Make Dummy Variables
> useddta$female <- as.numeric(useddta$sex == "female")

> table(useddta$sex, useddta$female, useNA = c("ifany"))

            0    1
  male   2480    0
  female    0 3226

> useddta$nonblack <- as.numeric(useddta$race != 'black')

> table(useddta$race, useddta$nonblack, useNA = c("ifany"))

           0    1
  iap      0    0
  white    0 4644
  black  770    0
  other    0  292

> #Drop Missing Data
> nmdta <- useddta[complete.cases(useddta),]

> #Make Pairwise Scatterplots
>
> scatterplotMatrix(~ mntlhlth + age + sex + race +
+                     educ + inc1k,
+                   smooth = list(span = 0.7), data = useddta)
```



Task 4 Run OLS Regression

- Run an OLS regression of mental health on age, sex (male as the reference category), race (nonblack as the reference category), education, and income.
- Provide interpretations for the set of coefficients of race and for the coefficient of educaiton.

```
ols.model <- lm(formula = mntlhlth ~ age + female + nonblack + educ + inc1k, data = nmdta )

> (summary(ols.model))

Call:
lm(formula = mntlhlth ~ age + female + nonblack + educ + inc1k,
    data = nmdta)

Residuals:
    Min      1Q  Median      3Q     Max
-6.5285 -4.0983 -2.8307  0.5829 27.6992

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  4.888469   1.735513   2.817  0.00498 **
age         -0.010493   0.020006  -0.525  0.60008
female       1.016221   0.527771   1.925  0.05455 .
nonblack     2.174152   0.784366   2.772  0.00571 **
educ        -0.192373   0.102653  -1.874  0.06132 .
inc1k       -0.004288   0.007949  -0.539  0.58974
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 7.102 on 744 degrees of freedom
Multiple R-squared:  0.01996, Adjusted R-squared:  0.01337
F-statistic:  3.03 on 5 and 744 DF,  p-value: 0.01024
```

Interpretation of slope for female:
Holding all other variables constant, we would expect females to have 1.01622 more poor mental health days on average than men.
Interpretation of slope for nonblack:
Holding all other variables constant, we would expect people who are nonblack to have 2.174152 more poor mental health days on average than people who are black.

Task 5 Produce Prediction

- Make within-sample predictions of the response variable.
- Make the hypothetical prediction for a 35-year old black female with 20 years of education and 60k of annual income, and provide interpretation for the results.

```
> #Predicted Outcomes for Full Estimation Sample
> nmdta$mntlhlthpr <- predict(ols.model, type = "response")

> summary(nmdta$mntlhlthpr)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-0.2233  3.3093  4.0865  3.9907  4.7694  6.7267

> #Hypothetical Prediction for 35-year old white female with 20 years of educ
> hyp.data <- data.frame( age = 35, nonblack = 1, female = 1,educ = 20, inc1k = 60)

> pr = predict(ols.model, hyp.data, interval = "confidence")
```

Close Out

- Close out the log file

```
> save(useddta, file = "Assignment_02.rdata")

> sink()
```

R Script

```
#source("/Users/burrisfaculty/Desktop/DSCode/SOC686/Shepherd_Lab
02_SOC686.R", echo = TRUE, max.deparse.length = 1000)

#Task 1
sink("assign_02_shepherd.log")
rm(list=ls(all = TRUE))
setwd("/Users/burrisfaculty/Desktop/DSCode/SOC686")
library(foreign)
library(carData)
library(car)
mygss <- read.dta("gsscum7212teach.dta")

#Task 2
usevar <- c("mntlhlth",'age','sex','race','educ','inc1k')
useddta <- mygss[usevar]

table(useddta$mntlhlth, useNA = c("ifany"))
summary(useddta$mntlhlth)
table(useddta$age, useNA = c("ifany"))
summary(useddta$age)
table(useddta$sex, useNA = c("ifany"))
summary(useddta$sex)
table(useddta$race, useNA = c("ifany"))
```

```
summary(useddta$race)
table(useddta$educ, useNA = c("ifany"))
summary(useddta$educ)
table(useddta$inc1k, useNA = c("ifany"))
summary(useddta$inc1k)

#TASK 3

#Make Dummy Variables
useddta$female <- as.numeric(useddta$sex == "female")
table(useddta$sex, useddta$female, useNA = c("ifany"))

useddta$nonblack <- as.numeric(useddta$race != 'black')
table(useddta$race, useddta$nonblack, useNA = c("ifany"))

#Drop Missing Data
nmdta <- useddta[complete.cases(useddta),]

#Make Pairwise Scatterplots

scatterplotMatrix(~ mntlhlth + age + sex + race +
                    educ + inc1k,
                  smooth = list(span = 0.7), data = useddta)
#TASK 4
#Run OLS
#usevar <- c("mntlhlth",'age','sex','race','educ','inc1k')
ols.model <- lm(formula = mntlhlth ~ age + female + nonblack +
educ + inc1k, data = nmdta )
(summary(ols.model))

#Interpret coefficients of female and nonblack in document

#Task 5
#Predicted Outcomes for Full Estimation Sample
nmdta$mntlhlthpr <- predict(ols.model, type = "response")
summary(nmdta$mntlhlthpr)

#Hypothetical Prediction for 35-year old white female with 20
years of educ
hyp.data <- data.frame( age = 35, nonblack = 1, female = 1,educ
= 20, inc1k = 60)
pr = predict(ols.model, hyp.data, interval = "confidence")


#Close Out
save(useddta, file = "Assignment_02.rdata")
sink()
```

Log