```
1    /*
2
3    PHD PROJECT: The role of depressive symptoms and cardiometabolic risk factors in the prediction
     of dementia: a cross-country comparison in England, the United States and China
4
5    STUDY 2: Mediating effects of depressive symptoms and cardiometabolic health on dementia
     development
6
7    Method of analysis:
8    Path Analysis (SEM)
9
10
11   MODEL
12
13   T1: EXPOSURE: DEPRESSIVE SYMPTOMS WV2 (BASELINE, 2008)
14            CARDIOMETABOLIC RISK WV2 (BASELINE, 2008)
15   T2: MEDIATOR: DEPRESSIVE SYMPTOMS WV4 (2010)
16            CARDIOMETABOLIC RISK: WV4 (2008)
17   T3: OUTCOME: DEMENTIA WV6 (2012)
18
19   COVARIATES ADJUSTMENT FOR PATH MODELS: WV8
20
21
22   */
23
24
25
26   * KEEP NECESSARY VARIABLES
27
28   keep HHID PN RAHHIDPN HHIDPN ///
29   H_sex H_age H_eduaction_yrs H_eduaction H_maritalstatus_4cat H_wealthquintiles ///
30   H_ethnicity H_hispanic_ethnicity ///
31   H_smoking_2cat H_smoking_3cat H_physicalactivity H_alcohol_freq H_alcohol_status ///
32   H_cvd_comorbidity Hwv8_cognition Hwv8_memory Hwv8_loneliness_quintiles ///
33   Hwv8_cesd_depressed Hwv8_cesd_effort Hwv8_cesd_sleep ///
34   Hwv8_cesd_happy Hwv8_cesd_lonely Hwv8_cesd_enlife Hwv8_cesd_sad ///
35   Hwv8_cesd_going Hwv8_cesd_score Hwv8_depressive_symptoms ///
36   Hwv10_cesd_depressed Hwv10_cesd_effort Hwv10_cesd_sleep ///
37   Hwv10_cesd_happy Hwv10_cesd_lonely Hwv10_cesd_enlife ///
38   Hwv10_cesd_sad Hwv10_cesd_going Hwv10_cesd_score Hwv10_depressive_symptoms ///
39   Hwv9_cesd_score Hwv9_depressive_symptoms ///
40   Hwv11_cesd_score Hwv11_depressive_symptoms ///
41   Hwv12_cesd_score Hwv12_depressive_symptoms ///
42   Hwv13_cesd_score Hwv13_depressive_symptoms ///
43   Hwv14_cesd_sumscore Hwv14_depressive_symptoms ///
44   Hwv8_crp_level Hwv8_crp Hwv8_hdl_level Hwv8_hdl ///
45   Hwv8_waist Hwv8_obesity_waist ///
46   Hwv8_bmi_score Hwv8_obesity ///
47   Hwv8_systolic_mean Hwv8_diastolic_mean Hwv8_systolic_bp Hwv8_diastolic_bp Hwv8_bp ///
48   Hwv8_diabetes_reportevr Hwv8_HbA1c_level Hwv8_HbA1c Hwv8_glycemia ///
49   Hwv10_crp_level Hwv10_crp Hwv10_hdl_level Hwv10_hdl ///
50   Hwv10_waist Hwv10_obesity_waist Hwv10_bmi_score ///
51   Hwv10_obesity Hwv10_systolic_mean Hwv10_diastolic_mean ///
52   Hwv10_systolic_bp Hwv10_diastolic_bp Hwv10_bp ///
53   Hwv10_diabetes_reportevr Hwv10_HbA1c_level Hwv10_HbA1c Hwv10_glycemia ///
54   Hwv8_memory_report Hwv9_memory_report Hwv10_anydementia_report ///
55   Hwv11_anydementia_report Hwv12_anydementia_report ///
56   Hwv13_anydementia_report Hwv14_anydementia_report ///
57   Hwv8_interview_date Hwv9_interview_date Hwv10_interview_date ///
58   Hwv11_interview_date Hwv12_interview_date Hwv13_interview_date Hwv14_interview_date ///
59   Hwv9to14_dementia_sum Hwv9to14_dementia_event ///
60   Hwv9to14_newdementia_or_lastinte Hwv9to14_dementia_free_date H_time_dementia_months ///
61   H_time_dementia_midpoint H_time_dementia_midpoint_final H_time_of_event_dementia ///
62   Hwv12to14_dementia_sum Hwv12to14_dementia_event Hwv12_anydementia_report ///
63   Hwv12to14_newdementia_or_lastint Hwv12to14_time_dementia_months ///
64   Hwv12to14_dementia_free_date Hwv12to14_time_dementia_midpoint ///
65   Hwv12to14_time_dementia_midpoin0 Hwv12to14_time_of_event_dementia
66
```

```
67
68
69
70
71
72      /* Prepare variables for SEM dataset
73
74      Binary variables of depressive symptoms and binary and continious cardiometabolic markers at wave
        8 and 10
75
76      EXPOSURE
77
78      DEPRESSION T1
79
80      Hwv8_cesd_depressed Hwv8_cesd_effort Hwv8_cesd_sleep Hwv8_cesd_happy Hwv8_cesd_lonely
        Hwv8_cesd_enlife Hwv8_cesd_sad Hwv8_cesd_going
81
82      ** Hwv8_cesd_happy Hwv8_cesd_enlife are already reverse coded (0= yes 1=no)
83
84
85      CARDIO HEALTH T1
86
87      CRP: Hwv8_crp_level Hwv8_crp
88      HDL cholesterol: Hwv8_hdl_level Hwv8_hdl
89      Obesity by waist cir: Hwv8_waist Hwv8_obesity_waist
90      SBP: Hwv8_systolic_mean Hwv8_systolic_bp
91      DBP: Hwv8_diastolic_mean Hwv8_systolic_bp
92      Diabetes: Hwv8_diabetes_reportevr
93      HbA1c: Hwv8_HbA1c_level Hwv8_HbA1c
94
95      MEDIATORS
96
97      DEPRESSION T2
98
99      Hwv10_cesd_depressed Hwv10_cesd_effort Hwv10_cesd_sleep Hwv10_cesd_happy Hwv10_cesd_lonely
        Hwv10_cesd_enlife Hwv10_cesd_sad Hwv10_cesd_going
100
101     ** Hwv10_cesd_happy Hwv10_cesd_enlife are already reverse coded (0= yes 1=no)
102
103
104     CARDIO HEALTH T2
105
106     CRP: Hwv10_crp_level Hwv10_crp
107     HDL cholesterol: Hwv10_hdl_level Hwv10_hdl
108     Obesity by waist cir: Hwv10_waist Hwv10_obesity_waist
109     SBP: Hwv10_systolic_mean Hwv10_systolic_bp
110     DBP: Hwv10_diastolic_mean Hwv10_diastolic_bp
111     Diabetes: Hwv10_diabetes_reportevr
112     HbA1c: Hwv10_HbA1c_level Hwv10_HbA1c
113
114
115     OUTCOME
116
117     Dementia incidence: Hwv12_anydementia_report (binary)
118
119
120     */
121
122
123
124
125
126
127
128
129
130     *** Descriptive stats of Exposure, Mediator and Outcome at time 1 (wave 8 baseline)
131
```

```stata
132   * depression
133
134
135   tabulate Hwv8_depressive_symptoms
136   summarize Hwv8_depressive_symptoms
137
138   misstable summarize Hwv8_depressive_symptoms
139   misstable patterns Hwv8_depressive_symptoms
140
141   *crp (invalid cases > 100)
142
143   tabulate Hwv8_crp_level
144   summarize Hwv8_crp_level, detail
145   histogram Hwv8_crp_level, discrete frequency normal
146   sktest Hwv8_crp_level
147
148   misstable summarize Hwv8_crp_level
149   misstable patterns Hwv8_crp_level
150
151   tabulate Hwv8_crp
152   summarize Hwv8_crp
153
154   misstable summarize Hwv8_crp
155   misstable patterns Hwv8_crp
156
157
158   *hdl
159
160   tabulate Hwv8_hdl_level
161   summarize Hwv8_hdl_level, detail
162   histogram Hwv8_hdl_level, discrete frequency normal
163   sktest Hwv8_hdl_level
164
165   misstable summarize Hwv8_hdl_level
166   misstable patterns Hwv8_hdl_level
167
168
169   tabulate Hwv8_hdl
170   summarize Hwv8_hdl
171
172   misstable summarize Hwv8_hdl
173   misstable patterns Hwv8_hdl
174
175
176   *obesity waist (invalid > 130)
177
178
179   tabulate Hwv8_waist
180   summarize Hwv8_waist, detail
181   histogram Hwv8_waist, discrete frequency normal
182   sktest Hwv8_waist
183
184
185   misstable summarize Hwv8_waist
186   misstable patterns Hwv8_waist
187
188   tabulate Hwv8_obesity_waist
189   summarize Hwv8_obesity_waist
190
191   misstable summarize Hwv8_obesity_waist
192   misstable patterns Hwv8_obesity_waist
193
194
195   *sbp (invalid > 300)
196
197   tabulate Hwv8_systolic_mean
198   summarize Hwv8_systolic_mean, detail
199   histogram Hwv8_systolic_mean, discrete frequency normal
```

```
200    sktest Hwv8_systolic_mean
201
202
203    misstable summarize Hwv8_systolic_mean
204    misstable patterns Hwv8_systolic_mean
205
206
207    tabulate Hwv8_systolic_bp
208    summarize Hwv8_systolic_bp
209
210    misstable summarize Hwv8_systolic_bp
211    misstable patterns Hwv8_systolic_bp
212
213
214
215    *dbp (invalid > 300)
216
217
218    tabulate Hwv8_diastolic_mean
219    summarize Hwv8_diastolic_mean, detail
220    histogram Hwv8_diastolic_mean, discrete frequency normal
221    sktest Hwv8_diastolic_mean
222
223    misstable summarize Hwv8_diastolic_mean
224    misstable patterns Hwv8_diastolic_mean
225
226    tabulate Hwv8_diastolic_bp
227    summarize Hwv8_diastolic_bp
228
229    misstable summarize Hwv8_diastolic_bp
230    misstable patterns Hwv8_diastolic_bp
231
232
233    * diabetes (cannot be measured in z-scores)
234
235    tabulate Hwv8_diabetes_reportevr
236    summarize Hwv8_diabetes_reportevr
237
238    misstable summarize Hwv8_diabetes_reportevr
239    misstable patterns Hwv8_diabetes_reportevr
240
241
242    * HbA1c
243
244    tabulate Hwv8_HbA1c_level
245    summarize Hwv8_HbA1c_level, detail
246    histogram Hwv8_HbA1c_level, discrete frequency normal
247    sktest Hwv8_HbA1c_level
248
249
250    misstable summarize Hwv8_HbA1c_level
251    misstable patterns Hwv8_HbA1c_level
252
253
254    tabulate Hwv8_HbA1c
255    summarize Hwv8_HbA1c
256
257    misstable summarize Hwv8_HbA1c
258    misstable patterns Hwv8_HbA1c
259
260
261
262    * dementia wave 8
263
264    tabulate Hwv8_memory_report
265    summarize Hwv8_memory_report
266
267    misstable summarize Hwv8_memory_report
```

```
268    misstable patterns Hwv8_memory_report
269
270
271
272
273
274
275    *** Descriptive stats of Exposure, Mediator and Outcome at time 2 (wave 10)
276
277    *depression
278
279    tabulate Hwv10_depressive_symptoms
280    summarize Hwv10_depressive_symptoms
281
282    misstable summarize Hwv10_depressive_symptoms
283    misstable patterns Hwv10_depressive_symptoms
284
285    *crp (invalid cases >100)
286
287    tabulate Hwv10_crp_level
288    summarize Hwv10_crp_level, detail
289    histogram Hwv10_crp_level, discrete frequency normal
290    sktest Hwv10_crp_level
291
292    misstable summarize Hwv10_crp_level
293    misstable patterns Hwv10_crp_level
294
295    tabulate Hwv10_crp
296    summarize Hwv10_crp
297
298    misstable summarize Hwv10_crp
299    misstable patterns Hwv10_crp
300
301
302    *hdl
303
304    tabulate Hwv10_hdl_level
305    summarize Hwv10_hdl_level, detail
306    histogram Hwv10_hdl_level, discrete frequency normal
307    sktest Hwv10_hdl_level
308
309    misstable summarize Hwv10_hdl_level
310    misstable patterns Hwv10_hdl_level
311
312
313    tabulate Hwv10_hdl
314    summarize Hwv10_hdl
315
316    misstable summarize Hwv10_hdl
317    misstable patterns Hwv10_hdl
318
319
320    *obesity waist (invalid > 130)
321
322
323    tabulate Hwv10_waist
324    summarize Hwv10_waist, detail
325    histogram Hwv10_waist, discrete frequency normal
326    sktest Hwv10_waist
327
328
329    misstable summarize Hwv10_waist
330    misstable patterns Hwv10_waist
331
332    tabulate Hwv10_obesity_waist
333    summarize Hwv10_obesity_waist
334
335    misstable summarize Hwv10_obesity_waist
```

```
336    misstable patterns Hwv10_obesity_waist
337
338
339    *sbp (invalid > 300)
340
341    tabulate Hwv10_systolic_mean
342    summarize Hwv10_systolic_mean, detail
343    histogram Hwv10_systolic_mean, discrete frequency normal
344    sktest Hwv10_systolic_mean
345
346
347    misstable summarize Hwv10_systolic_mean
348    misstable patterns Hwv10_systolic_mean
349
350
351    tabulate Hwv10_systolic_bp
352    summarize Hwv10_systolic_bp
353
354    misstable summarize Hwv10_systolic_bp
355    misstable patterns Hwv10_systolic_bp
356
357
358
359    *dbp (invalid > 300)
360
361
362    tabulate Hwv10_diastolic_mean
363    summarize Hwv10_diastolic_mean, detail
364    histogram Hwv10_diastolic_mean, discrete frequency normal
365    sktest Hwv10_diastolic_mean
366
367    misstable summarize Hwv10_diastolic_mean
368    misstable patterns Hwv10_diastolic_mean
369
370    tabulate Hwv10_diastolic_bp
371    summarize Hwv10_diastolic_bp
372
373    misstable summarize Hwv10_diastolic_bp
374    misstable patterns Hwv10_diastolic_bp
375
376
377    * diabetes (cannot be measured in z-scores)
378
379    tabulate Hwv10_diabetes_reportevr
380    summarize Hwv10_diabetes_reportevr
381
382    misstable summarize Hwv10_diabetes_reportevr
383    misstable patterns Hwv10_diabetes_reportevr
384
385
386    * HbA1c
387
388    tabulate Hwv10_HbA1c_level
389    summarize Hwv10_HbA1c_level, detail
390    histogram Hwv10_HbA1c_level, discrete frequency normal
391    sktest Hwv10_HbA1c_level
392
393
394    misstable summarize Hwv10_HbA1c_level
395    misstable patterns Hwv10_HbA1c_level
396
397
398    tabulate Hwv10_HbA1c
399    summarize Hwv10_HbA1c
400
401    misstable summarize Hwv10_HbA1c
402    misstable patterns Hwv10_HbA1c
403
```

```
404
405    *dementia wave 9 and 10
406
407
408    tabulate Hwv9_memory_report
409    summarize Hwv9_memory_report
410
411    misstable summarize Hwv9_memory_report
412    misstable patterns Hwv9_memory_report
413
414
415    tabulate Hwv10_anydementia_report
416    summarize Hwv10_anydementia_report
417
418    misstable summarize Hwv10_anydementia_report
419    misstable patterns Hwv10_anydementia_report
420
421
422
423
424
425    *** CLEANING DATA
426
427
428    * drop dementia cases at wv8, 9 and 10 and missing data at baseline
429
430    drop if Hwv8_memory_report==1
431    * (226 observations deleted)
432
433    drop if Hwv8_memory_report== .
434    * (0 observations deleted)
435
436    * drop dementia cases at wave 3 and 4
437
438    drop if Hwv9_memory_report==1
439    * (110 observations deleted)
440
441    drop if Hwv10_anydementia_report==1
442    * (105 observations deleted)
443
444
445
446
447    * drop invalid ca cases t1 and t2
448
449    * drop CRP > 100
450
451    drop if Hwv8_crp_level > 100 & Hwv8_crp_level < 300
452    * (1 observations deleted)
453
454
455    drop if Hwv10_crp_level > 100 & Hwv10_crp_level < 300
456    * (7 observations deleted)
457
458
459    * drop SBP > 300
460
461    drop if Hwv8_systolic_mean > 300 & Hwv8_systolic_mean < 1000
462    * (100 observations deleted)
463
464    * drop DBP > 300
465
466    drop if Hwv8_diastolic_mean > 300 & Hwv8_diastolic_mean < 1000
467    * (21 observations deleted)
468
469    * drop SBP > 300
470
471    drop if Hwv10_systolic_mean > 300 & Hwv10_systolic_mean < 1000
```

```
472    * (126 observations deleted)
473
474    * drop DBP > 300
475
476    drop if Hwv10_diastolic_mean > 300 & Hwv10_diastolic_mean < 1000
477    * (0 observations deleted)
478
479    * drop obesity > 130
480
481    drop if Hwv10_waist > 130 & Hwv10_waist < 500
482    * (1 observation deleted)
483
484    * drop obesity <20
485
486    drop if Hwv10_waist < 20
487    * (5 observations deleted)
488
489
490
491
492    * drop obs with no records on dementia at wave 12
493
494
495    drop if Hwv12_anydementia_report== .
496    * (1637 observations deleted)
497
498
499
500    * ANALYTIC SAMPLE -> 4396
501
502
503
504
505    *** Recoding crp and hdl of interest
506
507
508    * log transform crp (left-skewed)
509
510    gen log_Hwv8_crp_level=log(Hwv8_crp_level)
511    gen log_Hwv10_crp_level=log(Hwv10_crp_level)
512
513    * reverse HDL scores
514
515    * HDL cholesterol was reverse scored, so that for all biomarkers higher scores represent greater
       cardiometabolic dysfunction
516
517    findit revrs
518
519    revrs Hwv8_hdl_level Hwv10_hdl_level
520
521
522    *------------------*
523
524
525
526
527    * rename var of interest to shorter names (max 8 characters)
528
529    * multiple renaming
530    findit renvars
531
532
533    renvars Hwv8_cesd_score Hwv8_depressive_symptoms Hwv8_cesd_happy Hwv8_cesd_enlife
       Hwv8_cesd_depressed Hwv8_cesd_effort Hwv8_cesd_sleep Hwv8_cesd_lonely Hwv8_cesd_sad
       Hwv8_cesd_going Hwv8_crp Hwv8_hdl Hwv8_obesity_waist Hwv8_systolic_bp Hwv8_diastolic_bp
       Hwv8_diabetes_reportevr Hwv8_HbA1c log_Hwv8_crp_level revHwv8_hdl_level Hwv8_waist
       Hwv8_systolic_mean Hwv8_diastolic_mean Hwv8_HbA1c_level Hwv10_cesd_score Hwv10_depressive_symptoms
       Hwv10_cesd_happy Hwv10_cesd_enlife Hwv10_cesd_depressed Hwv10_cesd_effort Hwv10_cesd_sleep
```

```
        Hwv10_cesd_lonely Hwv10_cesd_sad Hwv10_cesd_going Hwv10_crp Hwv10_hdl Hwv10_obesity_waist
        Hwv10_systolic_bp Hwv10_diastolic_bp Hwv10_diabetes_reportevr Hwv10_HbA1c log_Hwv10_crp_level
        revHwv10_hdl_level Hwv10_waist Hwv10_systolic_mean Hwv10_diastolic_mean Hwv10_HbA1c_level
        Hwv12_anydementia_report H_age H_sex H_eduaction H_maritalstatus_4cat H_wealthquintiles
        H_smoking_3cat H_alcohol_status H_cvd_comorbidity \ cesdsc1 cesddr1 happy1 enlife1 depress1
        effort1 sleep1 lonely1 sad1 going1 crp1 hdl1 obese1 sbp1 dbp1 diab1 hba1c1 lcrp1 lhdl1 lobese1
        lsbp1 ldbp1 lhba1c1 cesdsc2 cesddr2 happy2 enlife2 depress2 effort2 sleep2 lonely2 sad2 going2
        crp2 hdl2 obese2 sbp2 dbp2 diab2 hba1c2 lcrp2 lhdl2 lobese2 lsbp2 ldbp2 lhba1c2 dem age sex educ
        marital wealth smoke alcohol cvd
534
535
536
537
538     * Corrrelation matrix of the CM and depression variables
539
540     * to create quality table in word - asdoc -
541     * https://www.youtube.com/watch?v=XHBl6PHfOzs&ab_channel=StataProfessor
542
543     help asdoc
544
545     asdoc pwcorr happy1 enlife1 depress1 effort1 sleep1 lonely1 sad1 going1 crp2 hdl2 obese2 sbp2 dbp2
         diab2 hba1c2, star(.05)
546
547
548     asdoc pwcorr crp1 hdl1 obese1 sbp1 dbp1 diab1 hba1c1 happy2 enlife2 depress2 effort2 sleep2
        lonely2 sad2 going2, star(.05)
549
550
551     * Corrrelation matrix of the categorical (birnary) Cardiometabolic and depression domains
552
553     /*
554
555     There are three metrics that are commonly used to calculate the correlation between categorical
        variables:
556
557     1. Tetrachoric Correlation: Used to calculate the correlation between binary categorical variables.
558
559     2. Polychoric Correlation: Used to calculate the correlation between ordinal categorical variables.
560
561     3. Cramer's V: Used to calculate the correlation between nominal categorical variables.
562
563     tetrachoric computes estimates of the tetrachoric correlation coefficients of the binary
        variables in varlist. All of these variables should be 0, 1, or missing values.
564
565     */
566
567
568     tetrachoric happy1 enlife1 depress1 effort1 sleep1 lonely1 sad1 going1 crp2 hdl2 obese2 sbp2 dbp2
        diab2 hba1c2, star(.05)
569
570     tetrachoric crp1 hdl1 obese1 sbp1 dbp1 diab1 hba1c1 happy2 enlife2 depress2 effort2 sleep2 lonely2
         sad2 going2, star(.05)
571
572
573
574
575     * KEEP SEM MODEL VARIABLES
576
577     keep happy1 enlife1 depress1 effort1 sleep1 lonely1 sad1 going1 ///
578     cesdsc1 cesddr1 ///
579     crp1 hdl1 obese1 sbp1 dbp1 diab1 hba1c1 lcrp1 lhdl1 ///
580     lobese1 lsbp1 ldbp1 lhba1c1 ///
581     happy2 enlife2 depress2 effort2 sleep2 lonely2 sad2 going2 ///
582     cesdsc2 cesddr2 ///
583     crp2 hdl2 obese2 sbp2 dbp2 diab2 hba1c2 lcrp2 ///
584     lhdl2 lobese2 lsbp2 ldbp2 lhba1c2 ///
585     dem age sex educ marital wealth smoke alcohol cvd
586
```

```stata
587
588
589
590    *** To read by Mplus -> Open in spss - missing data (-9) - save as csv - tab delimited - tick do
       not write var names on the first linear
591
592
593    *** convert from stata (dat) to mplus (dta)
594
595
596    help stata2mplus
597
598
599    stata2mplus using S:\Research\pkstudies\Study4_depr_cardio_path\HRS\hrs_sem, missing (-99) replace
600
601
602
603
604
605
606    * General baseline characteristics of ELSA participants by dementia status
607    * crosstabs categ var (frequencies and chi2) !report column percentage!
608    * oneway ANOVA cont var (mean, sd)
609
610
611    * Socio-demographics
612    ttest age, by(dem)
613    ta sex dem, chi2 column row
614    ta educ dem, chi2 column row
615    ta marital dem, chi2 column row
616    ta wealth dem, chi2 column row
617    * Cardiometabolic factors
618    ta crp1 dem, chi2 column row
619    ta hdl1 dem, chi2 column row
620    ta obese1 dem, chi2 column row
621    ta sbp1 dem, chi2 column row
622    ta dbp1 dem, chi2 column row
623    ta diab1 dem, chi2 column row
624    ta hba1c1 dem, chi2 column row
625    * Lifestyle/health factors
626    ta smoke dem, chi2 column row
627    ta Hwv12_physicalactivity Hwv12_anydementia_report, chi2 column row
628    ta alcohol dem, chi2 column row
629    ta cvd dem, chi2 column row
630    * Mental health
631    ttest cesdsc1, by(dem)
632    ta cesddr1 dem, chi2 column row
633
634
635
636
637    *** SENSITIVITY ANALYSES ***
638
639    /*
640
641    1) Stratify by age
642    generate age group variable
643    Age groups: 1) young old (< 70) 2) old old (>= 70)
644
645    2) Exclude those with CVDs at baseline
646
647    3) Mediation analysis on complete cases
648
649    */
650
651
652    * Stratify by age
653
```

```stata
654
655    gen age70=1 if age < 70
656    replace age70=2 if age >=70 & !missing(age)
657
658    label var age70 "Age groups <70 young-old / 70 old-old"
659    lab def age_group 1 "young" 2 "old"
660    lab val age70 age_group
661
662    tab age70
663
664
665
666
667
668
669    *** MISSING DATA ***
670
671
672    search mdesc
673
674
675    * examining number of missing values vs non-missing in each variable
676
677    mdesc age sex educ marital wealth smoke alcohol cvd happy1 enlife1 depress1 effort1 sleep1 lonely1
         sad1 going1 happy2 enlife2 depress2 effort2 sleep2 lonely2 sad2 going2 crp1 hdl1 obese1 sbp1 dbp1
         diab1 hba1c1 crp2 hdl2 obese2 sbp2 dbp2 diab2 hba1c2
678
679
680
681
682
683
684
```