



```

1 .
2 . *****ALL INFECTIONS*****
3 .
4 . use "E:\16GBBACKUPUSB\BACKUP_USB_SEPTEMBER2014\May Baydoun_folder\UK_BIOBANK_PROJECT\UKB_PAPER3_LE8INFECTDEM\DATA\
5 .
6 .
7 . *****STSET FOR AD*****
8 . stset Age_AD if sample_final2==1, failure(ad_diag==1) enter(baselineage) id(n_eid) scale(1)

```

Survival-time data settings

```

      ID variable: n_eid
      Failure event: ad_diag==1
Observed time interval: (Age_AD[_n-1], Age_AD]
Enter on or after: time baselineage
Exit on or before: failure
Keep observations
      if exp: sample_final2==1

```

502,389 total observations

151,052 ignored at outset because of if exp

351,337 observations remaining, representing

351,337 subjects

2,595 failures in single-failure-per-subject data

4,357,328 total analysis time at risk and under observation

At risk from t = 0

Earliest observed entry t = 50.00137

Last observed exit t = 87.63313

```

9 .
10 .
11 .
12 . *****OVERALL*****
13 .
14 . **Model 1**
15 .
16 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES LE8_TOTALSCORE if sample_final2==1

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
Enter on or after: time baselineage
      ID variable: n_eid

```

Iteration 0: log likelihood = -29849.733

Iteration 1: log likelihood = -29739.86

Iteration 2: log likelihood = -29739.678

Iteration 3: log likelihood = -29739.678

Refining estimates:

Iteration 0: log likelihood = -29739.678

Cox regression with Breslow method for ties

No. of subjects = 351,337

No. of failures = 2,595

Time at risk = 4,357,327.7

Number of obs = 351,337

LR chi2(7) = 220.11

Prob > chi2 = 0.0000

Log likelihood = -29739.678

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.00634	.0413807	0.15	0.878	.9284173	1.090802
AGE	.9282682	.0076975	-8.98	0.000	.9133033	.9434782
SEX	.9117451	.0360419	-2.34	0.019	.8437715	.9851945
NonWhite	1.067037	.1149037	0.60	0.547	.8640088	1.317775
householdsize	.987551	.0201808	-0.61	0.540	.9487791	1.027907
SES	.7038581	.0209716	-11.79	0.000	.6639317	.7461855
LE8_TOTALSCORE	.9998363	.0002151	-0.76	0.447	.9994148	1.000258

```

17 .
18 . **Model 2: Interaction with LE8 TOTAL SCORE**
19 . stcox c.infectionburdenbr##c.LE8_TOTALSCOREtert AGE SEX NonWhite householdsize SES if sample_final2==1

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

Iteration 0: log likelihood = -29849.733
Iteration 1: log likelihood = -29739.912
Iteration 2: log likelihood = -29739.739
Iteration 3: log likelihood = -29739.739
Refining estimates:
Iteration 0: log likelihood = -29739.739

```

Cox regression with Breslow method for ties

```

No. of subjects =      351,337          Number of obs = 351,337
No. of failures =       2,595
Time at risk    = 4,357,327.7

LR chi2(8)      = 219.99
Prob > chi2     = 0.0000

Log likelihood = -29739.739

```

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.075547	.1142467	0.69	0.493	.8734001	1.324481
LE8_TOTALSCOREtert	1.014326	.0311576	0.46	0.643	.9550604	1.07727
c.infectionburdenbr#c.LE8_TOTALSCOREtert	.9661885	.0496072	-0.67	0.503	.8736921	1.068477
AGE	.9282332	.0076968	-8.98	0.000	.9132697	.9434419
SEX	.9105098	.0359935	-2.37	0.018	.8426275	.9838607
NonWhite	1.068784	.1150911	0.62	0.537	.8654239	1.31993
householdsize	.9877831	.0201633	-0.60	0.547	.9490439	1.028104
SES	.7006663	.0207857	-11.99	0.000	.6610889	.7426132

```

20 .
21 . **Stratified analysis by LE8 TERTILES**

```

```

22 .
23 . **LOWEST TERTILE**
24 .
25 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if sample_final2==1 & LE8_TOTALSCOREtert==1

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

Iteration 0: log likelihood = -9898.5019
Iteration 1: log likelihood = -9844.1478
Iteration 2: log likelihood = -9844.0656
Iteration 3: log likelihood = -9844.0656
Refining estimates:
Iteration 0: log likelihood = -9844.0656

```

Cox regression with Breslow method for ties

```

No. of subjects =      123,145      Number of obs = 123,145
No. of failures =        947
Time at risk    = 1,513,183.3

LR chi2(6)      = 108.87
Prob > chi2     = 0.0000
Log likelihood = -9844.0656

```

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.067071	.0715616	0.97	0.333	.9356397	1.216964
AGE	.9170406	.0125453	-6.33	0.000	.892779	.9419616
SEX	.9508069	.0621307	-0.77	0.440	.8365085	1.080723
NonWhite	1.099617	.1799671	0.58	0.562	.7978682	1.515487
householdsize	.9727814	.0347106	-0.77	0.439	.9070743	1.043248
SES	.6757492	.0319537	-8.29	0.000	.6159357	.7413712

```

26 .
27 . **MIDDLE TERTILE**
28 .
29 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if sample_final2==1 & LE8_TOTALSCOREtert==2

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

Iteration 0: log likelihood = -9430.549
Iteration 1: log likelihood = -9394.413
Iteration 2: log likelihood = -9394.3731
Iteration 3: log likelihood = -9394.3731
Refining estimates:
Iteration 0: log likelihood = -9394.3731

```

Cox regression with Breslow method for ties

```

No. of subjects =      119,710      Number of obs = 119,710
No. of failures =        899
Time at risk    = 1,487,228.1

LR chi2(6)      = 72.35
Prob > chi2     = 0.0000
Log likelihood = -9394.3731

```

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	.9378982	.0663269	-0.91	0.365	.8165069	1.077337
AGE	.9319362	.0130559	-5.03	0.000	.9066952	.9578798
SEX	.9735911	.0653778	-0.40	0.690	.8535273	1.110544
NonWhite	.7707145	.1638356	-1.23	0.221	.5080989	1.169065
householdsize	.9981434	.0329706	-0.06	0.955	.9355697	1.064902
SES	.6946113	.0354125	-7.15	0.000	.6285592	.7676046

```

30 .
31 . **HIGHEST TERTILE**
32 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if sample_final2==1 & LE8_TOTALSCOREtert==3

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

Iteration 0: log likelihood = -7679.3911
Iteration 1: log likelihood = -7654.8331
Iteration 2: log likelihood = -7654.6637
Iteration 3: log likelihood = -7654.6634
Refining estimates:
Iteration 0: log likelihood = -7654.6634

```

Cox regression with Breslow method for ties

```

No. of subjects =      108,482          Number of obs = 108,482
No. of failures =        749
Time at risk    = 1,356,916.4

Log likelihood = -7654.6634          LR chi2(6)    =    49.46
                                      Prob > chi2    =    0.0000

```

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.012159	.0780122	0.16	0.875	.8702468	1.177214
AGE	.9372882	.0146633	-4.14	0.000	.9089848	.9664729
SEX	.8006858	.0591371	-3.01	0.003	.6927778	.9254016
NonWhite	1.443993	.2798774	1.90	0.058	.9876063	2.111284
householdsize	.9961861	.0372392	-0.10	0.919	.9258082	1.071914
SES	.7500972	.0432629	-4.99	0.000	.6699206	.8398694

```

33 .
34 . *****AMONG MEN*****
35 .
36 .
37 .
38 .
39 . **Model 1**

```

40 .
 41 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES LE8_TOTALSCORE if SEX==1 & sample_final2==1

Failure _d: ad_diag==1
 Analysis time _t: Age_AD
 Enter on or after: time baselineage
 ID variable: n_eid

note: SEX omitted because of collinearity.
 Iteration 0: log likelihood = -13859.655
 Iteration 1: log likelihood = -13804.56
 Iteration 2: log likelihood = -13804.469
 Iteration 3: log likelihood = -13804.469
 Refining estimates:
 Iteration 0: log likelihood = -13804.469

Cox regression with Breslow method for ties

No. of subjects = 162,530 Number of obs = 162,530
 No. of failures = 1,287
 Time at risk = 1,999,924.6
 Log likelihood = -13804.469
 LR chi2(6) = 110.37
 Prob > chi2 = 0.0000

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.014494	.059625	0.24	0.807	.9041106	1.138353
AGE	.9311289	.0108517	-6.12	0.000	.910101	.9526426
SEX	1	(omitted)				
NonWhite	1.089064	.1618493	0.57	0.566	.8138671	1.457314
householdsize	.9808367	.0293098	-0.65	0.517	.9250405	1.039998
SES	.6992898	.0286354	-8.73	0.000	.6453586	.7577279
LE8_TOTALSCORE	1.000118	.0003103	0.38	0.703	.9995103	1.000727

42 .
 43 . **Model 2: Interaction with LE8 TOTAL SCORE**
 44 . stcox c.infectionburdenbr##c.LE8_TOTALSCOREtert AGE SEX NonWhite householdsize SES if SEX==1 & sample_final2==1

Failure _d: ad_diag==1
 Analysis time _t: Age_AD
 Enter on or after: time baselineage
 ID variable: n_eid

note: SEX omitted because of collinearity.
 Iteration 0: log likelihood = -13859.655
 Iteration 1: log likelihood = -13802.591
 Iteration 2: log likelihood = -13802.503
 Iteration 3: log likelihood = -13802.503
 Refining estimates:
 Iteration 0: log likelihood = -13802.503

Cox regression with Breslow method for ties

No. of subjects = 162,530 Number of obs = 162,530
 No. of failures = 1,287
 Time at risk = 1,999,924.6
 Log likelihood = -13802.503
 LR chi2(7) = 114.30
 Prob > chi2 = 0.0000

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.231847	.1881859	1.36	0.172	.9131056	1.661852
LE8_TOTALSCOREtert	1.091163	.0474797	2.01	0.045	1.001962	1.188305
c.infectionburdenbr#c.LE8_TOTALSCOREtert	.9038229	.0669725	-1.36	0.172	.7816459	1.045097
AGE	.9308483	.0108451	-6.15	0.000	.9098331	.9523489
SEX	1	(omitted)				
NonWhite	1.090541	.1620669	0.58	0.560	.8149737	1.459285
householdsize	.981131	.0293018	-0.64	0.524	.925349	1.040276
SES	.6951969	.0283605	-8.91	0.000	.6417755	.7530651

```

45 .
46 . **Stratif SEX==1 by LE8 TERTILES**
47 .
48 . **LOWEST TERTILE**
49 .
50 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if SEX==1 & sample_final2==1 & LE8_TOTALSCOREtert==1

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

note: SEX omitted because of collinearity.
Iteration 0: log likelihood = -4554.8187
Iteration 1: log likelihood = -4529.8995
Iteration 2: log likelihood = -4529.8755
Iteration 3: log likelihood = -4529.8755
Refining estimates:
Iteration 0: log likelihood = -4529.8755

```

Cox regression with Breslow method for ties

```

No. of subjects =      61,810          Number of obs = 61,810
No. of failures =       467
Time at risk    = 753,376.476

LR chi2(5)      = 49.89
Prob > chi2     = 0.0000

Log likelihood = -4529.8755

```

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.10639	.1061104	1.05	0.292	.9167947	1.335194
AGE	.9193098	.0177006	-4.37	0.000	.8852638	.9546652
SEX	1	(omitted)				
NonWhite	.8953927	.2302819	-0.43	0.667	.5408751	1.48228
householdsize	.9941118	.0468886	-0.13	0.900	.9063317	1.090394
SES	.6919284	.0451484	-5.64	0.000	.6088638	.7863252

51 . ****MIDDLE TERTILE****

52 .

53 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if SEX==1 & sample_final2==1 & LE8_TOTALSCOREtert==2

Failure _d: ad_diag==1
 Analysis time _t: Age_AD
 Enter on or after: time baselineage
 ID variable: n_eid

note: **SEX** omitted because of collinearity.
 Iteration 0: log likelihood = **-4326.4446**
 Iteration 1: log likelihood = **-4300.0931**
 Iteration 2: log likelihood = **-4300.0376**
 Iteration 3: log likelihood = **-4300.0376**
 Refining estimates:
 Iteration 0: log likelihood = **-4300.0376**

Cox regression with Breslow method for ties

No. of subjects = **57,334**
 No. of failures = **443**
 Time at risk = **707,942.525**

Number of obs = **57,334**

Log likelihood = **-4300.0376**

LR chi2(5) = **52.81**
 Prob > chi2 = **0.0000**

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.013305	.101617	0.13	0.895	.8324905	1.233392
AGE	.9260783	.018339	-3.88	0.000	.8908232	.9627287
SEX	1	(omitted)				
NonWhite	.7050918	.2165453	-1.14	0.255	.3862137	1.287252
householdsize	.9947759	.0442588	-0.12	0.906	.9117048	1.085416
SES	.640735	.0444741	-6.41	0.000	.5592367	.7341102

54 .

55 . ****HIGHEST TERTILE****

56 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if SEX==1 & sample_final2==1 & LE8_TOTALSCOREtert==3

Failure _d: ad_diag==1
 Analysis time _t: Age_AD
 Enter on or after: time baselineage
 ID variable: n_eid

note: **SEX** omitted because of collinearity.
 Iteration 0: log likelihood = **-3568.6989**
 Iteration 1: log likelihood = **-3557.7339**
 Iteration 2: log likelihood = **-3556.9679**
 Iteration 3: log likelihood = **-3556.9599**
 Iteration 4: log likelihood = **-3556.9599**
 Refining estimates:
 Iteration 0: log likelihood = **-3556.9599**

Cox regression with Breslow method for ties

No. of subjects = **43,386**
 No. of failures = **377**
 Time at risk = **538,605.649**

Number of obs = **43,386**

Log likelihood = **-3556.9599**

LR chi2(5) = **23.48**
 Prob > chi2 = **0.0003**

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	.906991	.1010303	-0.88	0.381	.7290999	1.128285
AGE	.9510044	.0207187	-2.31	0.021	.9112513	.9924917
SEX	1	(omitted)				
NonWhite	1.954215	.4446433	2.94	0.003	1.251117	3.052435
householdsize	.9425278	.0643113	-0.87	0.386	.824545	1.077393
SES	.7808078	.0621891	-3.11	0.002	.6679569	.9127249

```

57 .
58 .
59 .
60 . *****AMONG WOMEN*****
61 .
62 .
63 .
64 .
65 . **Model 1**
66 .
67 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES LE8_TOTALSCORE if SEX==2 & sample_final2==1

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

note: SEX omitted because of collinearity.
Iteration 0:  log likelihood = -14188.718
Iteration 1:  log likelihood = -14134.076
Iteration 2:  log likelihood = -14133.998
Iteration 3:  log likelihood = -14133.998
Refining estimates:
Iteration 0:  log likelihood = -14133.998

```

Cox regression with Breslow method for ties

```

No. of subjects =      188,807          Number of obs = 188,807
No. of failures =       1,308
Time at risk    = 2,357,403.1

Log likelihood = -14133.998          LR chi2(6)    = 109.44
                                      Prob > chi2    = 0.0000

```

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	.9989711	.0574935	-0.02	0.986	.892409	1.118258
AGE	.9244999	.0109241	-6.64	0.000	.903335	.9461607
SEX	1	(omitted)				
NonWhite	1.046033	.163648	0.29	0.774	.7698001	1.421388
householdsize	.9938932	.0275753	-0.22	0.825	.9412898	1.049436
SES	.7093646	.0308271	-7.90	0.000	.6514463	.7724324
LE8_TOTALSCORE	.999593	.0002991	-1.36	0.174	.9990069	1.000179


```

68 .
69 . **Model 2: Interaction with LE8 TOTAL SCORE**
70 . stcox c.infectionburdenbr#c.LE8_TOTALSCOREtert AGE SEX NonWhite householdsize SES if SEX==2 & sample_final2==1

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

note: SEX omitted because of collinearity.
Iteration 0: log likelihood = -14188.718
Iteration 1: log likelihood = -14134.084
Iteration 2: log likelihood = -14134.012
Iteration 3: log likelihood = -14134.012
Refining estimates:
Iteration 0: log likelihood = -14134.012

```

Cox regression with Breslow method for ties

```

No. of subjects =      188,807          Number of obs = 188,807
No. of failures =       1,308
Time at risk    = 2,357,403.1

LR chi2(7)      = 109.41
Prob > chi2     = 0.0000
Log likelihood = -14134.012

```

	_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
	infectionburdenbr	.9396475	.1389121	-0.42	0.674	.7032799	1.255457
	LE8_TOTALSCOREtert	.9455156	.041054	-1.29	0.197	.8683799	1.029503
c.infectionburdenbr#c.LE8_TOTALSCOREtert		1.032926	.0736275	0.45	0.649	.898246	1.1878
	AGE	.9244882	.0109248	-6.64	0.000	.903322	.9461502
	SEX	1	(omitted)				
	NonWhite	1.04566	.1636056	0.29	0.775	.7695029	1.420924
	householdsize	.9938876	.0275755	-0.22	0.825	.9412839	1.049431
	SES	.7076931	.0306046	-7.99	0.000	.650181	.7702924

```

71 .
72 . **Stratif SEX==2 by LE8 TERTILES**
73 .
74 . **LOWEST TERTILE**
75 .
76 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if SEX==2 & sample_final2==1 & LE8_TOTALSCOREtert==1

```

```

      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid

```

```

note: SEX omitted because of collinearity.
Iteration 0: log likelihood = -4687.9564
Iteration 1: log likelihood = -4657.6259
Iteration 2: log likelihood = -4657.4666
Iteration 3: log likelihood = -4657.4662
Iteration 4: log likelihood = -4657.4662
Refining estimates:
Iteration 0: log likelihood = -4657.4662

```

Cox regression with Breslow method for ties

No. of subjects = 61,335
 No. of failures = 480
 Time at risk = 759,806.777

Number of obs = 61,335

Log likelihood = -4657.4662

LR chi2(5) = 60.98
 Prob > chi2 = 0.0000

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.032509	.0967958	0.34	0.733	.8592022	1.240773
AGE	.9152109	.0178028	-4.55	0.000	.8809747	.9507775
SEX	1 (omitted)					
NonWhite	1.293613	.2749898	1.21	0.226	.8528256	1.962224
householdsize	.9508292	.0524717	-0.91	0.361	.8533532	1.05944
SES	.6587485	.045227	-6.08	0.000	.5758105	.7536326

```

77 .
78 . **MIDDLE TERTILE**
79 .
80 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if SEX==2 & sample_final2==1 & LE8_TOTALSCOREtert==2

```

Failure _d: ad_diag==1
 Analysis time _t: Age_AD
 Enter on or after: time baselineage
 ID variable: n_eid

note: SEX omitted because of collinearity.
 Iteration 0: log likelihood = -4480.365
 Iteration 1: log likelihood = -4468.4593
 Iteration 2: log likelihood = -4468.4544
 Iteration 3: log likelihood = -4468.4544
 Refining estimates:
 Iteration 0: log likelihood = -4468.4544

Cox regression with Breslow method for ties

No. of subjects = 62,376
 No. of failures = 456
 Time at risk = 779,285.536

Number of obs = 62,376

Log likelihood = -4468.4544

LR chi2(5) = 23.82
 Prob > chi2 = 0.0002

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	.8733366	.0870905	-1.36	0.174	.7182878	1.061854
AGE	.9379287	.0185843	-3.23	0.001	.9022023	.9750698
SEX	1 (omitted)					
NonWhite	.8556708	.2521859	-0.53	0.597	.4802175	1.524668
householdsize	1.00352	.0494092	0.07	0.943	.9112056	1.105187
SES	.7615118	.057247	-3.62	0.000	.6571843	.8824012

```
81 .
82 . **HIGHEST TERTILE**
83 . stcox infectionburdenbr AGE SEX NonWhite householdsize SES if SEX==2 & sample_final2==1 & LE8_TOTALSCOREtert==3
```

```
      Failure _d: ad_diag==1
      Analysis time _t: Age_AD
      Enter on or after: time baselineage
      ID variable: n_eid
```

```
note: SEX omitted because of collinearity.
Iteration 0:  log likelihood = -3588.0021
Iteration 1:  log likelihood = -3573.8293
Iteration 2:  log likelihood = -3573.7847
Iteration 3:  log likelihood = -3573.7844
Iteration 4:  log likelihood = -3573.7844
Refining estimates:
Iteration 0:  log likelihood = -3573.7844
```

Cox regression with Breslow method for ties

```
No. of subjects =      65,096
No. of failures =       372
Time at risk    =  818,310.753
```

Number of obs = 65,096

Log likelihood = -3573.7844

```
LR chi2(5)      =  28.44
Prob > chi2     =  0.0000
```

_t	Haz. ratio	Std. err.	z	P> z	[95% conf. interval]	
infectionburdenbr	1.124169	.1205175	1.09	0.275	.9111247	1.387029
AGE	.9192164	.0207923	-3.72	0.000	.8793544	.9608854
SEX	1 (omitted)					
NonWhite	.8360572	.3197446	-0.47	0.640	.3950932	1.769182
householdsize	1.029422	.0426429	0.70	0.484	.9491465	1.116487
SES	.7208422	.0604763	-3.90	0.000	.6115433	.8496758

```
84 .
85 .
86 .
87 . *****HOSPITAL TREATED INFECTIONS: TABLES S2-S3*****
88 .
89 . capture log close
```