Statistics/Data Analysis

```
      name:  <unnamed>
       log:  C:\users\init5\My Documents\Stroke\death\interactions.smcl
  log type:  smcl
 opened on:  20 Jan 2022, 00:42:20

1 . do "C:\users\init5\Temp\STD2a_000000.tmp"

2 . *local dir `c(pwd)'
3 . //ON
4 . *cd "`c(pwd)'"
5 . *cd "D:\42-tiempoevento"
6 .
7 . **** Base de datos: Cáncer y muerte ****
8 . use "C:\users\init5\My Documents\Stroke\death\deaths.dta", clear
  (Written by R.              )

9 .
10. codebook
```

---

sexo **sexo**

```
                type:  numeric (long)
               label:  sexo

               range:  [1,2]                        units:  1
        unique values:  2                       missing .:  0/6,566

          tabulation:  Freq.   Numeric  Label
                       3,305         1  Men
                       3,261         2  Women
```

---

edad **edad**

```
                type:  numeric (double)

               range:  [35,108]                     units:  1
        unique values:  69                      missing .:  0/6,566

                mean:   68.5618
           std. dev:    13.895

        percentiles:        10%       25%       50%       75%       90%
                             49        59        70        79        86
```

---

cid10 **cid10**

```
                type:  string (str3)

        unique values:  4                       missing "":  0/6,566

          tabulation:  Freq.  Value
                         674  "I60"
                       1,291  "I61"
                       1,765  "I63"
                       2,836  "I64"
```

---

agecat **agecat**

```
                type:  numeric (long)
               label:  agecat
```

range: [1,3] units: 1
unique values: 3 missing .: 0/6,566

tabulation:

Freq.	Numeric	Label
1,176	1	<55
2,911	2	55-74
2,479	3	75+

level

type: numeric (long)
label: level

range: [1,2] units: 1
unique values: 2 missing .: 1/6,566

tabulation:

Freq.	Numeric	Label
2,885	1	I, II
3,680	2	III
1	.	

regions

type: numeric (long)
label: regions

range: [1,4] units: 1
unique values: 4 missing .: 0/6,566

tabulation:

Freq.	Numeric	Label
3,080	1	Lima/Callao
1,795	2	Resto Costa
1,110	3	Sierra
581	4	Selva

condicion

type: numeric (long)
label: condicion

range: [1,2] units: 1
unique values: 2 missing .: 0/6,566

tabulation:

Freq.	Numeric	Label
5,809	1	Discharged
757	2	Death

los

type: numeric (double)

range: [1,59] units: 1
unique values: 59 missing .: 0/6,566

mean: 9.43558
std. dev: 8.52819

percentiles:

10%	25%	50%	75%	90%
2	4	7	12	19

anio

```
                  type:  numeric (long)

                 range:  [2016,2017]                  units:  1
           unique values:  2                      missing .:  0/6,566

              tabulation:  Freq.  Value
                           3,053  2016
                           3,513  2017
```

---

exposure **exposure**

```
                  type:  numeric (long)
                 label:  exposure

                 range:  [1,4]                        units:  1
           unique values:  4                      missing .:  0/6,566

              tabulation:  Freq.   Numeric  Label
                           1,765         1  I63
                             674         2  I60
                           1,291         3  I61
                           2,836         4  I64
```

---

survivalobj0 **survivalobj0**

```
                  type:  numeric (double)

                 range:  [1,59]                       units:  1
           unique values:  59                     missing .:  0/6,566

                  mean:   9.43558
             std. dev:   8.52819

           percentiles:        10%       25%       50%       75%       90%
                                 2         4         7        12        19
```

11.
12. sum los, d

```
                            los
-------------------------------------------------------------
      Percentiles      Smallest
 1%             1             1
 5%             1             1
10%             2             1       Obs                6,566
25%             4             1       Sum of Wgt.        6,566

50%             7                     Mean            9.435577
                        Largest       Std. Dev.       8.528187
75%            12            58
90%            19            59       Variance        72.72997
95%            26            59       Skewness        2.243973
99%            44            59       Kurtosis        9.611837
```

13.
14. *label define condicion 0 "Discharged" 1 "Death", replace

```
15. ******************** KAPLAN MEIER ********************
16. *modificar base a SURVIVAL TIME
17. *SETEAR A SOBREVIDA
18. stset los, failure(condicion==2)

      failure event:  condicion == 2
obs. time interval:  (0, los]
 exit on or before:  failure

------------------------------------------------------------------------------
      6,566  total observations
          0  exclusions
------------------------------------------------------------------------------
      6,566  observations remaining, representing
        757  failures in single-record/single-failure data
     61,954  total analysis time at risk and under observation
                                             at risk from t =         0
                                  earliest observed entry t =         0
                                       last observed exit t =        59

19.
20. *listar todos los eventos en tiempo y funcion SOBREVIDA por cada punto en el tiempo
21. *en el que ocurre evento de interes
22. sts list, survival

        failure _d:  condicion == 2
  analysis time _t:  los
```

Time	Beg. Total	Fail	Net Lost	Survivor Function	Std. Error	[95% Conf.	Int.]
1	6566	102	243	0.9845	0.0015	0.9812	0.9872
2	6221	103	376	0.9682	0.0022	0.9636	0.9722
3	5742	96	484	0.9520	0.0027	0.9464	0.9570
4	5162	73	555	0.9385	0.0031	0.9322	0.9443
5	4534	63	514	0.9255	0.0035	0.9184	0.9320
6	3957	48	450	0.9142	0.0038	0.9065	0.9214
7	3459	42	446	0.9031	0.0041	0.8948	0.9109
8	2971	29	335	0.8943	0.0044	0.8854	0.9026
9	2607	21	284	0.8871	0.0046	0.8777	0.8958
10	2302	20	253	0.8794	0.0049	0.8695	0.8886
11	2029	16	240	0.8725	0.0051	0.8620	0.8822
12	1773	21	190	0.8622	0.0056	0.8509	0.8727
13	1562	19	163	0.8517	0.0060	0.8395	0.8630
14	1380	14	159	0.8430	0.0064	0.8301	0.8550
15	1207	7	124	0.8381	0.0066	0.8248	0.8506
16	1076	4	121	0.8350	0.0067	0.8213	0.8478
17	951	7	116	0.8289	0.0071	0.8145	0.8423
18	828	8	94	0.8209	0.0076	0.8055	0.8351
19	726	10	67	0.8096	0.0083	0.7928	0.8251
20	649	2	68	0.8071	0.0084	0.7899	0.8230
21	579	2	48	0.8043	0.0086	0.7867	0.8205
22	529	5	53	0.7967	0.0092	0.7780	0.8140
23	471	5	43	0.7882	0.0098	0.7682	0.8067
24	423	4	40	0.7808	0.0104	0.7595	0.8004
25	379	4	34	0.7725	0.0111	0.7499	0.7934
26	341	1	18	0.7703	0.0113	0.7472	0.7915
27	322	2	23	0.7655	0.0117	0.7416	0.7875
28	297	2	26	0.7603	0.0122	0.7354	0.7832
29	269	1	18	0.7575	0.0125	0.7320	0.7809
30	250	2	23	0.7514	0.0131	0.7247	0.7760
31	225	2	15	0.7448	0.0138	0.7165	0.7706
32	208	3	10	0.7340	0.0149	0.7034	0.7620
33	195	0	14	0.7340	0.0149	0.7034	0.7620
34	181	0	15	0.7340	0.0149	0.7034	0.7620
35	166	3	15	0.7207	0.0165	0.6869	0.7516
36	148	0	10	0.7207	0.0165	0.6869	0.7516
37	138	1	8	0.7155	0.0172	0.6802	0.7477
38	129	3	10	0.6989	0.0193	0.6592	0.7349
39	116	2	13	0.6868	0.0208	0.6442	0.7255
40	101	1	6	0.6800	0.0216	0.6355	0.7203
41	94	1	9	0.6728	0.0226	0.6263	0.7148

42	84	3	5	0.6488	0.0257	0.5959	0.6965
43	76	0	3	0.6488	0.0257	0.5959	0.6965
44	73	0	10	0.6488	0.0257	0.5959	0.6965
45	63	0	11	0.6488	0.0257	0.5959	0.6965
46	52	0	3	0.6488	0.0257	0.5959	0.6965
47	49	0	2	0.6488	0.0257	0.5959	0.6965
48	47	0	2	0.6488	0.0257	0.5959	0.6965
49	45	0	1	0.6488	0.0257	0.5959	0.6965
50	44	1	4	0.6340	0.0290	0.5742	0.6878
51	39	2	7	0.6015	0.0355	0.5283	0.6671
52	30	1	3	0.5815	0.0396	0.4999	0.6544
53	26	1	8	0.5591	0.0439	0.4687	0.6401
54	17	0	2	0.5591	0.0439	0.4687	0.6401
55	15	0	3	0.5591	0.0439	0.4687	0.6401
56	12	0	2	0.5591	0.0439	0.4687	0.6401
57	10	0	4	0.5591	0.0439	0.4687	0.6401
58	6	0	3	0.5591	0.0439	0.4687	0.6401
59	3	0	3	0.5591	0.0439	0.4687	0.6401

23. sts list, failure

failure _d: **condicion == 2**
analysis time _t: **los**

Time	Beg. Total	Fail	Net Lost	Failure Function	Std. Error	[95% Conf.	Int.]
1	6566	102	243	0.0155	0.0015	0.0128	0.0188
2	6221	103	376	0.0318	0.0022	0.0278	0.0364
3	5742	96	484	0.0480	0.0027	0.0430	0.0536
4	5162	73	555	0.0615	0.0031	0.0557	0.0678
5	4534	63	514	0.0745	0.0035	0.0680	0.0816
6	3957	48	450	0.0858	0.0038	0.0786	0.0935
7	3459	42	446	0.0969	0.0041	0.0891	0.1052
8	2971	29	335	0.1057	0.0044	0.0974	0.1146
9	2607	21	284	0.1129	0.0046	0.1042	0.1223
10	2302	20	253	0.1206	0.0049	0.1114	0.1305
11	2029	16	240	0.1275	0.0051	0.1178	0.1380
12	1773	21	190	0.1378	0.0056	0.1273	0.1491
13	1562	19	163	0.1483	0.0060	0.1370	0.1605
14	1380	14	159	0.1570	0.0064	0.1450	0.1699
15	1207	7	124	0.1619	0.0066	0.1494	0.1752
16	1076	4	121	0.1650	0.0067	0.1522	0.1787
17	951	7	116	0.1711	0.0071	0.1577	0.1855
18	828	8	94	0.1791	0.0076	0.1649	0.1945
19	726	10	67	0.1904	0.0083	0.1749	0.2072
20	649	2	68	0.1929	0.0084	0.1770	0.2101
21	579	2	48	0.1957	0.0086	0.1795	0.2133
22	529	5	53	0.2033	0.0092	0.1860	0.2220
23	471	5	43	0.2118	0.0098	0.1933	0.2318
24	423	4	40	0.2192	0.0104	0.1996	0.2405
25	379	4	34	0.2275	0.0111	0.2066	0.2501
26	341	1	18	0.2297	0.0113	0.2085	0.2528
27	322	2	23	0.2345	0.0117	0.2125	0.2584
28	297	2	26	0.2397	0.0122	0.2168	0.2646
29	269	1	18	0.2425	0.0125	0.2191	0.2680
30	250	2	23	0.2486	0.0131	0.2240	0.2753
31	225	2	15	0.2552	0.0138	0.2294	0.2835
32	208	3	10	0.2660	0.0149	0.2380	0.2966
33	195	0	14	0.2660	0.0149	0.2380	0.2966
34	181	0	15	0.2660	0.0149	0.2380	0.2966
35	166	3	15	0.2793	0.0165	0.2484	0.3131
36	148	0	10	0.2793	0.0165	0.2484	0.3131
37	138	1	8	0.2845	0.0172	0.2523	0.3198
38	129	3	10	0.3011	0.0193	0.2651	0.3408
39	116	2	13	0.3132	0.0208	0.2745	0.3558
40	101	1	6	0.3200	0.0216	0.2797	0.3645
41	94	1	9	0.3272	0.0226	0.2852	0.3737
42	84	3	5	0.3512	0.0257	0.3035	0.4041
43	76	0	3	0.3512	0.0257	0.3035	0.4041
44	73	0	10	0.3512	0.0257	0.3035	0.4041

45	63	0	11	0.3512	0.0257	0.3035	0.4041
46	52	0	3	0.3512	0.0257	0.3035	0.4041
47	49	0	2	0.3512	0.0257	0.3035	0.4041
48	47	0	2	0.3512	0.0257	0.3035	0.4041
49	45	0	1	0.3512	0.0257	0.3035	0.4041
50	44	1	4	0.3660	0.0290	0.3122	0.4258
51	39	2	7	0.3985	0.0355	0.3329	0.4717
52	30	1	3	0.4185	0.0396	0.3456	0.5001
53	26	1	8	0.4409	0.0439	0.3599	0.5313
54	17	0	2	0.4409	0.0439	0.3599	0.5313
55	15	0	3	0.4409	0.0439	0.3599	0.5313
56	12	0	2	0.4409	0.0439	0.3599	0.5313
57	10	0	4	0.4409	0.0439	0.3599	0.5313
58	6	0	3	0.4409	0.0439	0.3599	0.5313
59	3	0	3	0.4409	0.0439	0.3599	0.5313

```
24.
25. ************************************************
26. *************** WEIBULL MODEL ********************
27. **********A: xLEVEL**********
28. *AM:
29. *Y=B0 + B1.Level + B2.Exposure + B3.confusores
30. streg i.level i.exposure edad sexo regions, strata(level) d(weibull)

          failure _d:  condicion == 2
    analysis time _t:  los

Fitting constant-only model:

Iteration 0:   log likelihood = -2929.1917
Iteration 1:   log likelihood = -2919.8551
Iteration 2:   log likelihood = -2880.9267
Iteration 3:   log likelihood = -2880.2076
Iteration 4:   log likelihood = -2880.2059
Iteration 5:   log likelihood = -2880.2059

Fitting full model:

Iteration 0:   log likelihood = -2880.2059
Iteration 1:   log likelihood = -2823.3566
Iteration 2:   log likelihood = -2819.4306
Iteration 3:   log likelihood = -2819.4189
Iteration 4:   log likelihood = -2819.4189

Weibull PH regression

No. of subjects =        6,565                 Number of obs    =       6,565
No. of failures =          757
Time at risk    =        61951
                                               LR chi2(7)       =      121.57
Log likelihood  =   -2819.4189                 Prob > chi2      =      0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_t						
level						
III	-.3619585	.1783177	-2.03	0.042	-.7114548	-.0124622
exposure						
I60	.9117641	.1263048	7.22	0.000	.6642112	1.159317
I61	.6621304	.1160787	5.70	0.000	.4346202	.8896405
I64	.3227619	.1122407	2.88	0.004	.1027741	.5427496
edad	.0120413	.0027566	4.37	0.000	.0066384	.0174442
sexo	.1973987	.07442	2.65	0.008	.0515382	.3432592
regions	.1730589	.0449346	3.85	0.000	.0849887	.2611292
_cons	-6.107922	.289156	-21.12	0.000	-6.674657	-5.541187
ln_p						
level						

III	-.089429	.0576808	-1.55	0.121	-.2024814	.0236233
_cons	.0676713	.0392324	1.72	0.085	-.0092229	.1445654

```
31.
32. *AM + Interaction:
33. *Y = B0 + B1.Level + B2.Exposure + B3.Level.Exposure + B4.confusores
34. streg i.level i.exposure i.level#i.exposure edad sexo regions, strata(level) d(weibu
  > ll)

        failure _d:  condicion == 2
  analysis time _t:  los

Fitting constant-only model:

Iteration 0:   log likelihood = -2929.1917
Iteration 1:   log likelihood = -2919.8551
Iteration 2:   log likelihood = -2880.9267
Iteration 3:   log likelihood = -2880.2076
Iteration 4:   log likelihood = -2880.2059
Iteration 5:   log likelihood = -2880.2059

Fitting full model:

Iteration 0:   log likelihood = -2880.2059
Iteration 1:   log likelihood = -2821.4962
Iteration 2:   log likelihood =  -2817.154
Iteration 3:   log likelihood = -2817.1438
Iteration 4:   log likelihood = -2817.1438

Weibull PH regression

No. of subjects =        6,565                 Number of obs    =       6,565
No. of failures =          757
Time at risk    =        61951
                                               LR chi2(10)      =      126.12
Log likelihood  =   -2817.1438                 Prob > chi2      =      0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_t						
level						
III	-.6143757	.2433084	-2.53	0.012	-1.091251	-.1375
exposure						
I60	.5569273	.2091909	2.66	0.008	.1469207	.9669339
I61	.4902353	.1844673	2.66	0.008	.128686	.8517846
I64	.1498568	.1594725	0.94	0.347	-.1627036	.4624172
level#exposure						
III#I60	.5495682	.2587048	2.12	0.034	.0425161	1.05662
III#I61	.2695937	.2369246	1.14	0.255	-.19477	.7339574
III#I64	.2630245	.2276341	1.16	0.248	-.1831302	.7091792
edad	.0122116	.0027649	4.42	0.000	.0067925	.0176308
sexo	.1940838	.0744387	2.61	0.009	.0481866	.339981
regions	.1760252	.0447454	3.93	0.000	.0883258	.2637246
_cons	-5.953974	.3071989	-19.38	0.000	-6.556072	-5.351875
ln_p						
level						
III	-.0973017	.0579075	-1.68	0.093	-.2107983	.0161949
_cons	.0707342	.0392434	1.80	0.071	-.0061815	.1476499

```
35.
36. **********B: xREGIONS********
37. *AM: Y = B0 + B1.regions + B2.Exposure + B3.confusores
38. streg i.regions i.exposure edad sexo level, strata(regions) d(weibull)

          failure _d:  condicion == 2
    analysis time _t:  los

  Fitting constant-only model:

  Iteration 0:   log likelihood = -2929.1917
  Iteration 1:   log likelihood = -2884.2214
  Iteration 2:   log likelihood = -2878.7258
  Iteration 3:   log likelihood = -2878.6955
  Iteration 4:   log likelihood = -2878.6955

  Fitting full model:

  Iteration 0:   log likelihood = -2878.6955
  Iteration 1:   log likelihood = -2814.8524
  Iteration 2:   log likelihood = -2810.9673
  Iteration 3:   log likelihood = -2810.9536
  Iteration 4:   log likelihood = -2810.9536

  Weibull PH regression

  No. of subjects =        6,565                 Number of obs    =       6,565
  No. of failures =          757
  Time at risk    =        61951
                                                 LR chi2(9)       =      135.48
  Log likelihood  =   -2810.9536                 Prob > chi2      =      0.0000

------------------------------------------------------------------------------
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_t           |
     regions |
Resto Costa |  -.0794902   .2099071    -0.38   0.705    -.4909006    .3319203
     Sierra |   .0470416   .2226808     0.21   0.833    -.3894047    .4834879
      Selva |  -.1436643   .2960632    -0.49   0.627    -.7239374    .4366089
            |
    exposure |
        I60 |   .9008532   .1262031     7.14   0.000     .6534997    1.148207
        I61 |   .6781191   .1165153     5.82   0.000     .4497532     .906485
        I64 |   .3350844   .1122055     2.99   0.003     .1151656    .5550032
            |
       edad |   .0115871   .0027683     4.19   0.000     .0061614    .0170128
       sexo |   .2006856   .0744163     2.70   0.007     .0548322    .3465389
      level |  -.6273912   .0955668    -6.56   0.000    -.8146987   -.4400837
      _cons |  -4.964694   .3220454   -15.42   0.000    -5.595892   -4.333497
-------------+----------------------------------------------------------------
ln_p         |
     regions |
Resto Costa |   .0131409   .0726636     0.18   0.856    -.1292772     .155559
     Sierra |   .1598568   .0730365     2.19   0.029     .0167079    .3030057
      Selva |    .192744   .0996989     1.93   0.053    -.0026622    .3881502
            |
      _cons |  -.029825   .0460428    -0.65   0.517    -.1200673    .0604173
------------------------------------------------------------------------------
```

```
39.
40. *AM + Interaction: Y = B0 + B1.regions + B2.Exposure + B3.regions.Exposure + B4.conf
  > usores
41. streg i.regions i.exposure i.regions#i.exposure edad sexo level, strata(regions) d(w
  > eibull)

          failure _d:  condicion == 2
    analysis time _t:  los

  Fitting constant-only model:

  Iteration 0:   log likelihood = -2929.1917
  Iteration 1:   log likelihood = -2884.2214
  Iteration 2:   log likelihood = -2878.7258
  Iteration 3:   log likelihood = -2878.6955
  Iteration 4:   log likelihood = -2878.6955

  Fitting full model:

  Iteration 0:   log likelihood = -2878.6955
  Iteration 1:   log likelihood = -2810.2459
  Iteration 2:   log likelihood = -2804.9526
  Iteration 3:   log likelihood = -2804.9396
  Iteration 4:   log likelihood = -2804.9396

  Weibull PH regression

  No. of subjects =        6,565                 Number of obs    =       6,565
  No. of failures =          757
  Time at risk    =        61951
                                                 LR chi2(18)      =      147.51
  Log likelihood  =   -2804.9396                 Prob > chi2      =      0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_t						
regions						
Resto Costa	-.2714482	.3161954	-0.86	0.391	-.8911799	.3482835
Sierra	.2918204	.3076709	0.95	0.343	-.3112034	.8948442
Selva	.2062672	.4421595	0.47	0.641	-.6603495	1.072884
exposure						
I60	1.091008	.1672407	6.52	0.000	.7632222	1.418794
I61	.5804435	.1675475	3.46	0.001	.2520564	.9088307
I64	.4162338	.1641362	2.54	0.011	.0945329	.7379348
regions#exposure						
Resto Costa#I60	-.2137281	.3649618	-0.59	0.558	-.9290401	.5015839
Resto Costa#I61	.5209254	.3079435	1.69	0.091	-.0826328	1.124484
Resto Costa#I64	.114274	.3026056	0.38	0.706	-.4788221	.70737
Sierra#I60	-.522009	.3201502	-1.63	0.103	-1.149492	.1054738
Sierra#I61	-.225574	.3112808	-0.72	0.469	-.8356731	.384525
Sierra#I64	-.2990957	.2790259	-1.07	0.284	-.8459765	.2477851
Selva#I60	-.6258732	.4365807	-1.43	0.152	-1.481556	.2298092
Selva#I61	-.017875	.468409	-0.04	0.970	-.9359397	.9001896
Selva#I64	-.4647523	.4052912	-1.15	0.252	-1.259108	.3296039
edad	.0117606	.0027799	4.23	0.000	.006312	.0172091
sexo	.1974269	.0747155	2.64	0.008	.0509872	.3438666
level	-.6383702	.0980461	-6.51	0.000	-.8305371	-.4462034
_cons	-4.984867	.3302563	-15.09	0.000	-5.632158	-4.337577
ln_p						
regions						
Resto Costa	.0145426	.0731539	0.20	0.842	-.1288364	.1579215
Sierra	.1680622	.0733918	2.29	0.022	.0242169	.3119074
Selva	.1888735	.1023588	1.85	0.065	-.011746	.389493
_cons	-.0333308	.0463084	-0.72	0.472	-.1240935	.057432

```
42.
43. ********COMPARISONS************
44. *XLEVEL
45. streg i.level i.exposure i.level#i.exposure edad sexo regions, strata(level) d(weibu
  > ll)

        failure _d:  condicion == 2
  analysis time _t:  los

Fitting constant-only model:

Iteration 0:   log likelihood = -2929.1917
Iteration 1:   log likelihood = -2919.8551
Iteration 2:   log likelihood = -2880.9267
Iteration 3:   log likelihood = -2880.2076
Iteration 4:   log likelihood = -2880.2059
Iteration 5:   log likelihood = -2880.2059

Fitting full model:

Iteration 0:   log likelihood = -2880.2059
Iteration 1:   log likelihood = -2821.4962
Iteration 2:   log likelihood =  -2817.154
Iteration 3:   log likelihood = -2817.1438
Iteration 4:   log likelihood = -2817.1438

Weibull PH regression

No. of subjects =        6,565                 Number of obs    =       6,565
No. of failures =          757
Time at risk    =        61951
                                               LR chi2(10)      =      126.12
Log likelihood  =   -2817.1438                 Prob > chi2      =      0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_t						
level						
III	-.6143757	.2433084	-2.53	0.012	-1.091251	-.1375
exposure						
I60	.5569273	.2091909	2.66	0.008	.1469207	.9669339
I61	.4902353	.1844673	2.66	0.008	.128686	.8517846
I64	.1498568	.1594725	0.94	0.347	-.1627036	.4624172
level#exposure						
III#I60	.5495682	.2587048	2.12	0.034	.0425161	1.05662
III#I61	.2695937	.2369246	1.14	0.255	-.19477	.7339574
III#I64	.2630245	.2276341	1.16	0.248	-.1831302	.7091792
edad	.0122116	.0027649	4.42	0.000	.0067925	.0176308
sexo	.1940838	.0744387	2.61	0.009	.0481866	.339981
regions	.1760252	.0447454	3.93	0.000	.0883258	.2637246
_cons	-5.953974	.3071989	-19.38	0.000	-6.556072	-5.351875
ln_p						
level						
III	-.0973017	.0579075	-1.68	0.093	-.2107983	.0161949
_cons	.0707342	.0392434	1.80	0.071	-.0061815	.1476499

```
46. estimates store m1

47. streg i.level i.exposure edad sexo regions, strata(level) d(weibull)

          failure _d:  condicion == 2
    analysis time _t:  los

  Fitting constant-only model:

  Iteration 0:   log likelihood = -2929.1917
  Iteration 1:   log likelihood = -2919.8551
  Iteration 2:   log likelihood = -2880.9267
  Iteration 3:   log likelihood = -2880.2076
  Iteration 4:   log likelihood = -2880.2059
  Iteration 5:   log likelihood = -2880.2059

  Fitting full model:

  Iteration 0:   log likelihood = -2880.2059
  Iteration 1:   log likelihood = -2823.3566
  Iteration 2:   log likelihood = -2819.4306
  Iteration 3:   log likelihood = -2819.4189
  Iteration 4:   log likelihood = -2819.4189

  Weibull PH regression

  No. of subjects =        6,565                 Number of obs    =       6,565
  No. of failures =          757
  Time at risk    =        61951
                                                 LR chi2(7)       =      121.57
  Log likelihood  =   -2819.4189                 Prob > chi2      =      0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_t						
level						
III	-.3619585	.1783177	-2.03	0.042	-.7114548	-.0124622
exposure						
I60	.9117641	.1263048	7.22	0.000	.6642112	1.159317
I61	.6621304	.1160787	5.70	0.000	.4346202	.8896405
I64	.3227619	.1122407	2.88	0.004	.1027741	.5427496
edad	.0120413	.0027566	4.37	0.000	.0066384	.0174442
sexo	.1973987	.07442	2.65	0.008	.0515382	.3432592
regions	.1730589	.0449346	3.85	0.000	.0849887	.2611292
_cons	-6.107922	.289156	-21.12	0.000	-6.674657	-5.541187
ln_p						
level						
III	-.089429	.0576808	-1.55	0.121	-.2024814	.0236233
_cons	.0676713	.0392324	1.72	0.085	-.0092229	.1445654

```
48. lrtest . m1

  Likelihood-ratio test                                 LR chi2(3)  =       4.55
  (Assumption: . nested in m1)                          Prob > chi2 =     0.2079
```

```
49.
50. streg i.level i.exposure i.level#i.exposure edad sexo i.regions, strata(regions) d(w
  > eibull)

          failure _d:  condicion == 2
    analysis time _t:  los

  Fitting constant-only model:

  Iteration 0:   log likelihood = -2929.1917
  Iteration 1:   log likelihood = -2884.2214
  Iteration 2:   log likelihood = -2878.7258
  Iteration 3:   log likelihood = -2878.6955
  Iteration 4:   log likelihood = -2878.6955

  Fitting full model:

  Iteration 0:   log likelihood = -2878.6955
  Iteration 1:   log likelihood =  -2813.517
  Iteration 2:   log likelihood = -2808.7138
  Iteration 3:   log likelihood = -2808.7042
  Iteration 4:   log likelihood = -2808.7042

  Weibull PH regression

  No. of subjects =        6,565                 Number of obs    =       6,565
  No. of failures =          757
  Time at risk    =        61951
                                                 LR chi2(12)      =      139.98
  Log likelihood  =   -2808.7042                 Prob > chi2      =      0.0000

------------------------------------------------------------------------------
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_t           |
       level |
         III |  -.8786449   .1929721    -4.55   0.000    -1.256863   -.5004265
             |
    exposure |
         I60 |   .5594234    .209149     2.67   0.007     .1494989    .9693479
         I61 |   .4942215   .1849231     2.67   0.008     .1317789    .8566642
         I64 |   .1878392   .1603953     1.17   0.242    -.1265299    .5022083
             |
level#exposure |
    III#I60 |   .5293625    .258609     2.05   0.041     .0224982    1.036227
    III#I61 |   .2916557   .2370072     1.23   0.218    -.1728699    .7561812
    III#I64 |   .1967712   .2286256     0.86   0.389    -.2513267    .6448691
             |
        edad |   .0118124   .0027767     4.25   0.000     .0063702    .0172546
        sexo |   .1971312   .0744485     2.65   0.008     .0512148    .3430476
             |
     regions |
  Resto Costa |  -.0842596   .2101502    -0.40   0.688    -.4961463    .3276272
      Sierra |   .0349221   .2226912     0.16   0.875    -.4015447    .4713889
       Selva |  -.1410102   .2951122    -0.48   0.633    -.7194194     .437399
             |
       _cons |  -5.437332   .2963848   -18.35   0.000    -6.018236   -4.856429
-------------+----------------------------------------------------------------
ln_p         |
     regions |
  Resto Costa |   .0155264   .0727205     0.21   0.831    -.1270031    .1580559
      Sierra |   .1675501   .0731081     2.29   0.022     .0242609    .3108393
       Selva |   .1938713   .0993669     1.95   0.051    -.0008843    .3886268
             |
       _cons |  -.0327523   .0460896    -0.71   0.477    -.1230863    .0575817
------------------------------------------------------------------------------
```

```
51. estimates store m2

52. streg i.level i.exposure edad sexo i.regions, strata(regions) d(weibull)

           failure _d:  condicion == 2
     analysis time _t:  los

  Fitting constant-only model:

  Iteration 0:   log likelihood = -2929.1917
  Iteration 1:   log likelihood = -2884.2214
  Iteration 2:   log likelihood = -2878.7258
  Iteration 3:   log likelihood = -2878.6955
  Iteration 4:   log likelihood = -2878.6955

  Fitting full model:

  Iteration 0:   log likelihood = -2878.6955
  Iteration 1:   log likelihood = -2814.8524
  Iteration 2:   log likelihood = -2810.9673
  Iteration 3:   log likelihood = -2810.9536
  Iteration 4:   log likelihood = -2810.9536

  Weibull PH regression

  No. of subjects =        6,565                 Number of obs    =        6,565
  No. of failures =          757
  Time at risk    =        61951
                                                 LR chi2(9)       =       135.48
  Log likelihood  =   -2810.9536                 Prob > chi2      =       0.0000

------------------------------------------------------------------------------
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_t           |
       level |
         III |  -.6273912   .0955668    -6.56   0.000    -.8146987   -.4400837
             |
    exposure |
         I60 |   .9008532   .1262031     7.14   0.000     .6534997    1.148207
         I61 |   .6781191   .1165153     5.82   0.000     .4497532     .906485
         I64 |   .3350844   .1122055     2.99   0.003     .1151656    .5550032
             |
        edad |   .0115871   .0027683     4.19   0.000     .0061614    .0170128
        sexo |   .2006856   .0744163     2.70   0.007     .0548322    .3465389
             |
     regions |
Resto Costa  |  -.0794902   .2099071    -0.38   0.705    -.4909006    .3319203
      Sierra |   .0470416   .2226808     0.21   0.833    -.3894047    .4834879
       Selva |  -.1436643   .2960632    -0.49   0.627    -.7239374    .4366089
             |
       _cons |  -5.592085   .2782639   -20.10   0.000    -6.137473   -5.046698
-------------+----------------------------------------------------------------
ln_p         |
     regions |
Resto Costa  |   .0131409   .0726636     0.18   0.856    -.1292772     .155559
      Sierra |   .1598568   .0730365     2.19   0.029     .0167079    .3030057
       Selva |    .192744   .0996989     1.93   0.053    -.0026622    .3881502
             |
       _cons |  -.029825    .0460428    -0.65   0.517    -.1200673    .0604173
------------------------------------------------------------------------------
```

```
53. lrtest . m2

  Likelihood-ratio test                                 LR chi2(3)  =      4.50
  (Assumption: . nested in m2)                          Prob > chi2 =    0.2124

54.
55. *xREGIONS
56. streg i.regions i.exposure i.regions#i.exposure edad sexo level, strata(regions) d(w
  > eibull)

          failure _d:  condicion == 2
    analysis time _t:  los

  Fitting constant-only model:

  Iteration 0:   log likelihood = -2929.1917
  Iteration 1:   log likelihood = -2884.2214
  Iteration 2:   log likelihood = -2878.7258
  Iteration 3:   log likelihood = -2878.6955
  Iteration 4:   log likelihood = -2878.6955

  Fitting full model:

  Iteration 0:   log likelihood = -2878.6955
  Iteration 1:   log likelihood = -2810.2459
  Iteration 2:   log likelihood = -2804.9526
  Iteration 3:   log likelihood = -2804.9396
  Iteration 4:   log likelihood = -2804.9396

  Weibull PH regression

  No. of subjects =        6,565                Number of obs    =       6,565
  No. of failures =          757
  Time at risk    =        61951
                                                LR chi2(18)      =      147.51
  Log likelihood  =   -2804.9396                Prob > chi2      =      0.0000

------------------------------------------------------------------------------
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_t           |
     regions |
Resto Costa |  -.2714482   .3161954    -0.86   0.391    -.8911799    .3482835
      Sierra |   .2918204   .3076709     0.95   0.343    -.3112034    .8948442
       Selva |   .2062672   .4421595     0.47   0.641    -.6603495    1.072884
             |
    exposure |
         I60 |   1.091008   .1672407     6.52   0.000     .7632222    1.418794
         I61 |   .5804435   .1675475     3.46   0.001     .2520564    .9088307
         I64 |   .4162338   .1641362     2.54   0.011     .0945329    .7379348
             |
regions#exposure |
Resto Costa#I60 |  -.2137281   .3649618    -0.59   0.558    -.9290401    .5015839
Resto Costa#I61 |   .5209254   .3079435     1.69   0.091    -.0826328    1.124484
Resto Costa#I64 |    .114274   .3026056     0.38   0.706    -.4788221      .70737
  Sierra#I60 |  -.522009   .3201502    -1.63   0.103    -1.149492    .1054738
  Sierra#I61 |  -.225574   .3112808    -0.72   0.469    -.8356731     .384525
  Sierra#I64 |  -.2990957   .2790259    -1.07   0.284    -.8459765    .2477851
   Selva#I60 |  -.6258732   .4365807    -1.43   0.152    -1.481556    .2298092
   Selva#I61 |   -.017875    .468409    -0.04   0.970    -.9359397    .9001896
   Selva#I64 |  -.4647523   .4052912    -1.15   0.252    -1.259108    .3296039
             |
        edad |   .0117606   .0027799     4.23   0.000      .006312    .0172091
        sexo |   .1974269   .0747155     2.64   0.008     .0509872    .3438666
       level |  -.6383702   .0980461    -6.51   0.000    -.8305371   -.4462034
       _cons |  -4.984867   .3302563   -15.09   0.000    -5.632158   -4.337577
-------------+----------------------------------------------------------------
ln_p         |
     regions |
Resto Costa |   .0145426   .0731539     0.20   0.842    -.1288364    .1579215
      Sierra |   .1680622   .0733918     2.29   0.022     .0242169    .3119074
       Selva |   .1888735   .1023588     1.85   0.065     -.011746     .389493
------------------------------------------------------------------------------
```

_cons	-.0333308	.0463084	-0.72	0.472	-.1240935	.057432

57. estimates store m3

58. streg i.regions i.exposure edad sexo level, strata(regions) d(weibull)

failure _d: condicion == 2
analysis time _t: los

Fitting constant-only model:

Iteration 0: log likelihood = -2929.1917
Iteration 1: log likelihood = -2884.2214
Iteration 2: log likelihood = -2878.7258
Iteration 3: log likelihood = -2878.6955
Iteration 4: log likelihood = -2878.6955

Fitting full model:

Iteration 0: log likelihood = -2878.6955
Iteration 1: log likelihood = -2814.8524
Iteration 2: log likelihood = -2810.9673
Iteration 3: log likelihood = -2810.9536
Iteration 4: log likelihood = -2810.9536

Weibull PH regression

No. of subjects = 6,565
No. of failures = 757
Time at risk = 61951
Log likelihood = -2810.9536

Number of obs = 6,565
LR chi2(9) = 135.48
Prob > chi2 = 0.0000

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_t						
regions						
Resto Costa	-.0794902	.2099071	-0.38	0.705	-.4909006	.3319203
Sierra	.0470416	.2226808	0.21	0.833	-.3894047	.4834879
Selva	-.1436643	.2960632	-0.49	0.627	-.7239374	.4366089
exposure						
I60	.9008532	.1262031	7.14	0.000	.6534997	1.148207
I61	.6781191	.1165153	5.82	0.000	.4497532	.906485
I64	.3350844	.1122055	2.99	0.003	.1151656	.5550032
edad	.0115871	.0027683	4.19	0.000	.0061614	.0170128
sexo	.2006856	.0744163	2.70	0.007	.0548322	.3465389
level	-.6273912	.0955668	-6.56	0.000	-.8146987	-.4400837
_cons	-4.964694	.3220454	-15.42	0.000	-5.595892	-4.333497
ln_p						
regions						
Resto Costa	.0131409	.0726636	0.18	0.856	-.1292772	.155559
Sierra	.1598568	.0730365	2.19	0.029	.0167079	.3030057
Selva	.192744	.0996989	1.93	0.053	-.0026622	.3881502
_cons	-.029825	.0460428	-0.65	0.517	-.1200673	.0604173

```
59. lrtest . m3, force

  Likelihood-ratio test                                 LR chi2(9)  =     12.03
  (Assumption: . nested in m3)                          Prob > chi2 =    0.2117

60.
61. streg i.regions i.exposure i.regions#i.exposure edad sexo level, strata(regions) d(w
  > eibull)

          failure _d:  condicion == 2
    analysis time _t:  los

  Fitting constant-only model:

  Iteration 0:   log likelihood = -2929.1917
  Iteration 1:   log likelihood = -2884.2214
  Iteration 2:   log likelihood = -2878.7258
  Iteration 3:   log likelihood = -2878.6955
  Iteration 4:   log likelihood = -2878.6955

  Fitting full model:

  Iteration 0:   log likelihood = -2878.6955
  Iteration 1:   log likelihood = -2810.2459
  Iteration 2:   log likelihood = -2804.9526
  Iteration 3:   log likelihood = -2804.9396
  Iteration 4:   log likelihood = -2804.9396

  Weibull PH regression

  No. of subjects =        6,565                Number of obs    =       6,565
  No. of failures =          757
  Time at risk    =        61951
                                                LR chi2(18)      =      147.51
  Log likelihood  =   -2804.9396                Prob > chi2      =      0.0000

------------------------------------------------------------------------------
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_t           |
     regions |
  Resto Costa |  -.2714482   .3161954    -0.86   0.391    -.8911799    .3482835
       Sierra |   .2918204   .3076709     0.95   0.343    -.3112034    .8948442
        Selva |   .2062672   .4421595     0.47   0.641    -.6603495    1.072884
              |
    exposure  |
          I60 |   1.091008   .1672407     6.52   0.000     .7632222    1.418794
          I61 |   .5804435   .1675475     3.46   0.001     .2520564    .9088307
          I64 |   .4162338   .1641362     2.54   0.011     .0945329    .7379348
              |
regions#exposure |
Resto Costa#I60 |  -.2137281   .3649618    -0.59   0.558    -.9290401    .5015839
Resto Costa#I61 |   .5209254   .3079435     1.69   0.091    -.0826328    1.124484
Resto Costa#I64 |    .114274   .3026056     0.38   0.706    -.4788221      .70737
     Sierra#I60 |  -.522009    .3201502    -1.63   0.103    -1.149492    .1054738
     Sierra#I61 |  -.225574    .3112808    -0.72   0.469    -.8356731     .384525
     Sierra#I64 |  -.2990957   .2790259    -1.07   0.284    -.8459765    .2477851
      Selva#I60 |  -.6258732   .4365807    -1.43   0.152    -1.481556    .2298092
      Selva#I61 |  -.017875    .468409     -0.04   0.970    -.9359397    .9001896
      Selva#I64 |  -.4647523   .4052912    -1.15   0.252    -1.259108    .3296039
              |
        edad  |   .0117606   .0027799     4.23   0.000      .006312    .0172091
        sexo  |   .1974269   .0747155     2.64   0.008     .0509872    .3438666
       level  |  -.6383702   .0980461    -6.51   0.000    -.8305371   -.4462034
       _cons  |  -4.984867   .3302563   -15.09   0.000    -5.632158   -4.337577
-------------+----------------------------------------------------------------
ln_p         |
     regions |
  Resto Costa |   .0145426   .0731539     0.20   0.842    -.1288364    .1579215
       Sierra |   .1680622   .0733918     2.29   0.022     .0242169    .3119074
        Selva |   .1888735   .1023588     1.85   0.065     -.011746     .389493
------------------------------------------------------------------------------
```

_cons	-.0333308	.0463084	-0.72	0.472	-.1240935	.057432

62. estimates store m4

63. streg i.regions i.exposure edad sexo level, strata(level) d(weibull)

failure _d: condicion == 2
analysis time _t: los
note: 2.level omitted because of collinearity

Fitting constant-only model:

Iteration 0: log likelihood = -2929.1917
Iteration 1: log likelihood = -2919.8551
Iteration 2: log likelihood = -2880.9267
Iteration 3: log likelihood = -2880.2076
Iteration 4: log likelihood = -2880.2059
Iteration 5: log likelihood = -2880.2059

Fitting full model:

Iteration 0: log likelihood = -2880.2059
Iteration 1: log likelihood = -2818.157
Iteration 2: log likelihood = -2813.3007
Iteration 3: log likelihood = -2813.2889
Iteration 4: log likelihood = -2813.2889

Weibull PH regression

No. of subjects = 6,565
No. of failures = 757
Time at risk = 61951
Log likelihood = -2813.2889

Number of obs = 6,565
LR chi2(9) = 133.83
Prob > chi2 = 0.0000

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_t						
regions						
Resto Costa	-.0435898	.101939	-0.43	0.669	-.2433865	.1562069
Sierra	.4619899	.1127817	4.10	0.000	.2409419	.6830379
Selva	.34141	.1538764	2.22	0.027	.0398177	.6430022
exposure						
I60	.9063269	.1261589	7.18	0.000	.65906	1.153594
I61	.6788063	.1165236	5.83	0.000	.4504242	.9071884
I64	.335813	.1122332	2.99	0.003	.11584	.555786
edad	.011579	.0027681	4.18	0.000	.0061536	.0170044
sexo	.1991876	.0744159	2.68	0.007	.0533352	.3450401
level	-.3728917	.1786885	-2.09	0.037	-.7231146	-.0226687
level						
III	0	(omitted)				
_cons	-5.48962	.3828487	-14.34	0.000	-6.23999	-4.739251
ln_p						
level						
III	-.09625	.0578134	-1.66	0.096	-.2095621	.0170621
_cons	.0743786	.0393401	1.89	0.059	-.0027267	.1514838

```
64. lrtest . m4, force

  Likelihood-ratio test                                 LR chi2(11) =     16.70
  (Assumption: . nested in m4)                          Prob > chi2 =    0.1171

65.
  end of do-file

66. log close
        name:  <unnamed>
         log:  C:\users\init5\My Documents\Stroke\death\interactions.smcl
    log type:  smcl
   closed on:  20 Jan 2022, 00:44:32
```