

lss07solmod.log

```
names city, sex, un4gy, distcat, agxcat, agecat, dcat, time, subjects,
      upyr, pyr, gdist, agex, age, year, solid, oralca, lip, tongue,
      saliv, mouth, pharynx, digestca, esoph, stomach, smallint, colon,
      rectum, liver, gallbldr, pancr, othdig, respca, nasal, larynx,
      lung, othres, thymus, skinbone, bone, connect, nmskin, skbasal,
      sksquam, bowens, breast, femgenca, uterus, utrnos, cervix, corpus,
      ovary, othfem, malgenca, prost, testis, othmale, urinca, bladder,
      kidney, renal, othurin, cnsca, thyroid, othsol, msother,
      adeno, squam, othepi, sarcoma, othnonepi, histnos,
      cola02w10, cola02g, cola02n, mara02w10, mara02g, mara02n,
      braa02w10, brea02w10, liva02w10, liva02g, liva02n, luna02w10,
      ovaa02w10, pana02w10, skea02w10, skia02w10, stoa02w10,
      tesa02w10, thya02w10, blaa02w10, utea02w10, trunc02, adjust02
```

@

! Remove unknown dose records

```
tran if cola02w10 < 0 then delete endif @
SKIP 1 @
```

INPUT lssinc07.csv @

Input from lssinc07.csv

```
          26807 records read          25570 records used
                        1237 records rejected
```

97 variables defined At least 500 additional variables can be created.

! set up categorical variables

leve city sex un4gy distcat agxcat agecat dcat time @

! define dose and age at exposure categories for case summary tables

city has 2 levels from 1 to 2

sex has 2 levels from 1 to 2

un4gy has 2 levels from 0 to 1

distcat has 3 levels from 1 to 3

agxcat has 15 levels from 1 to 15

agecat has 16 levels from 3 to 18

dcat has 22 levels from 2 to 23

time has 10 levels from 1 to 10

categ cola02w10 < 0.005 0.1 0.2 0.5 1 2 > as tbdcat @

tbdcat has 7 levels from 1 to 7

categ cola02w10 < 0.005 0.5 1 > as d4cat @

d4cat has 4 levels from 1 to 4

categ agex < 10 20 30 40 50 > as agxdec @

agxdec has 6 levels from 1 to 6

! define variables used in fitting models

```
tran msex = 2*sex - 3 ;
      lage70 = log(age/70) ; lage70sq = lage70^2 ;
      lage70qsp = lage70sq*(age > 70) ;
      lage50sp = log(age/50)*(age >= 50) ;
      e30 = (agex - 30)/10 ; e30sq = e30^2 ;
      pyl0k = pyr/10000 ;
      hidose = cola02w10 > 2 ;
      lodose = 1 - hidose ;
```

@

! Expected dose squared if 35% random dose errors

```
tran      cola02wsq = 1.12*cola02w10^2 ;
```

@

! Define additional variables of interest

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tran

```

    distal = distcat == 2 ;
    nic = distcat == 3 ;
    hiro = city == 1 ; naga = city == 2 ;
    tsx25 = (age - agex - 25) ;

```

@

! Solid cancer ERR model

cases solid @

pyr pyl0k @

excess @

*** WARNING: Fit model again to compute statistics

line 1 cola02w10=0 cola02wsq=0 @

logl 1 e30=0 lage70=0 @

pline 1 %con=1 msex=0 @

fit sex:4 naga nic*hiro nic*naga

sex*lage70:4 sex*lage70sq sex*lage70qsp

sex*e30 sex*e30sq - %con @

Iter	Step	Deviance
0	0	25630.834
1	1	18706.711
2	0	15702.194
3	0	15167.087
4	0	15161.500
5	0	15161.499
6	0	15161.499

Piece-wise exponential regression

Product additive excess model { T0 * (1 + T1 + T2 + ...) }

solid is used for cases

pyl0k is used for person years

Parameter Summary Table

# Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0				
1 sex_1.....	5.391	0.01932	279	< 0.001
2 sex_2.....	4.613	0.01701	271.2	< 0.001
3 naga.....	-0.05558	0.01938	-2.868	0.00413
4 nic * hiro.....	-0.1409	0.02047	-6.884	< 0.001
5 nic * naga.....	-0.1007	0.0384	-2.621	0.00876
6 sex_1 * lage70.....	5.820	0.1726	33.72	< 0.001
7 sex_2 * lage70.....	3.580	0.126	28.42	< 0.001
8 sex_1 * lage70sq.....	0.1485	0.2825	0.5258	> 0.5
9 sex_2 * lage70sq.....	0.2979	0.1707	1.746	0.0808
10 sex_1 * lage70qsp.....	-13.39	1.419	-9.436	< 0.001
11 sex_2 * lage70qsp.....	-3.681	1.038	-3.547	< 0.001
12 sex_1 * e30.....	-0.1775	0.01031	-17.22	< 0.001
13 sex_2 * e30.....	-0.08537	0.009995	-8.542	< 0.001
14 sex_1 * e30sq.....	0.006535	0.00461	1.418	0.156
15 sex_2 * e30sq.....	0.005558	0.004265	1.303	0.193
Linear term 1				
16 cola02w10.....	0.000	Fixed	20.02	< 0.001
17 cola02wsq.....	0.000	Fixed	18.48	< 0.001
Log-linear term 1				
18 e30.....	0.000	Aliased		
19 lage70.....	0.000	Aliased		
Linear product term 1				

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20 %CON..... 1.000 Aliased
21 msex..... 0.000 Aliased

Records used 25570

Deviance 15161.499
Pearson Chi2 100989.75 Degrees of freedom 25555

null @
para 16 free @
fit @

Iter	Step	Deviance
0	0	15161.499
1	0	14839.581
2	0	14839.021
3	0	14839.021

Piece-wise exponential regression
Product additive excess model { T0 * (1 + T1 + T2 + ...) }

solid is used for cases
pyl0k is used for person years

Parameter Summary Table

# Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0				
1 sex_1.....	5.313	0.02003	265.2	< 0.001
2 sex_2.....	4.543	0.01765	257.4	< 0.001
3 naga.....	-0.04376	0.0194	-2.256	0.0241
4 nic * hiro.....	-0.06981	0.02103	-3.32	< 0.001
5 nic * naga.....	-0.03998	0.03861	-1.035	0.3
6 sex_1 * lage70.....	5.839	0.1725	33.84	< 0.001
7 sex_2 * lage70.....	3.599	0.126	28.57	< 0.001
8 sex_1 * lage70sq.....	0.1671	0.2824	0.5916	> 0.5
9 sex_2 * lage70sq.....	0.3130	0.1706	1.834	0.0666
10 sex_1 * lage70qsp.....	-13.36	1.418	-9.417	< 0.001
11 sex_2 * lage70qsp.....	-3.655	1.037	-3.523	< 0.001
12 sex_1 * e30.....	-0.1788	0.01031	-17.34	< 0.001
13 sex_2 * e30.....	-0.08444	0.01	-8.443	< 0.001
14 sex_1 * e30sq.....	0.008200	0.004609	1.779	0.0752
15 sex_2 * e30sq.....	0.006384	0.004269	1.495	0.135
Linear term 1				
16 cola02w10.....	0.6151	0.04301	14.3	< 0.001
17 cola02wsq.....	0.000	Fixed	1.092	0.275
Log-linear term 1				
18 e30.....	0.000	Fixed	-7.065	< 0.001
19 lage70.....	0.000	Fixed	-9.323	< 0.001
Linear product term 1				
20 %CON.....	1.000	Aliased		
21 msex.....	0.000	Fixed	4.69	< 0.001

Records used 25570

Deviance 14839.021
Pearson Chi2 58724.417 Degrees of freedom 25554

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LR statistic 322.5 Degrees of freedom 1
P value < 0.001

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para 18-19 free 21 free @
fit @

Iter	Step	Deviance
0	0	14839.021
1	0	14791.672
2	0	14739.459
3	0	14735.982
4	0	14735.954
5	0	14735.954

Piece-wise exponential regression
Product additive excess model { T0 * (1 + T1 + T2 + ...) }

solid is used for cases
pyl0k is used for person years

Parameter Summary Table

# Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0				
1 sex_1.....	5.338	0.02008	265.8	< 0.001
2 sex_2.....	4.547	0.01802	252.3	< 0.001
3 naga.....	-0.04657	0.0194	-2.401	0.0163
4 nic * hiro.....	-0.07414	0.02099	-3.532	< 0.001
5 nic * naga.....	-0.03794	0.03863	-0.9821	0.326
6 sex_1 * lage70.....	5.875	0.1728	33.99	< 0.001
7 sex_2 * lage70.....	3.652	0.1265	28.86	< 0.001
8 sex_1 * lage70sq.....	0.04283	0.2847	0.1504	> 0.5
9 sex_2 * lage70sq.....	0.1152	0.181	0.6364	> 0.5
10 sex_1 * lage70qsp.....	-13.34	1.419	-9.406	< 0.001
11 sex_2 * lage70qsp.....	-3.551	1.041	-3.412	< 0.001
12 sex_1 * e30.....	-0.1721	0.01059	-16.26	< 0.001
13 sex_2 * e30.....	-0.07426	0.01071	-6.936	< 0.001
14 sex_1 * e30sq.....	0.007165	0.004633	1.546	0.122
15 sex_2 * e30sq.....	0.004649	0.004356	1.067	0.286
Linear term 1				
16 cola02w10.....	0.4666	0.04413	10.57	< 0.001
17 cola02wsq.....	0.000	Fixed	0.866	0.386
Log-linear term 1				
18 e30.....	-0.1849	0.0636	-2.908	0.00364
19 lage70.....	-1.621	0.3058	-5.3	< 0.001
Linear product term 1				
20 %CON.....	1.000	Aliased		
21 msex.....	0.2465	0.06762	3.646	< 0.001

Records used 25570

Deviance	14735.954		
Pearson Chi2	43595.007	Degrees of freedom	25551

sum subjects pyr solid %bk %ex@

Summary for subjects

Sum	Count	Minimum	Maximum
105427	25570	0	763

Summary for pyr

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Sum	Count	Minimum	Maximum
2.76473e+06	25570	0.00054000	3636.6

Summary for solid

Sum	Count	Minimum	Maximum
17448	25570	0	46

Summary for %BK

Sum	Count	Minimum	Maximum
16596.1	25570	2.3323e-07	30.467

Summary for %EX

Sum	Count	Minimum	Maximum
851.890	25570	0	1.0815

sum subjects pyr solid %bk %ex; by tbdcat @

Summary for subjects

tbdcat	Sum	Count	Minimum	Maximum
1	60792	3853	0	763
2	27789	5973	0	394
3	5527	4208	0	82
4	5935	3390	0	90
5	3173	2227	0	62
6	1647	3454	0	29
7	564	2465	0	26

Summary for pyr

tbdcat	Sum	Count	Minimum	Maximum
1	1.59894e+06	3853	0.0025900	3636.6
2	729604.	5973	0.0019900	2008.7
3	145925.	4208	0.0025900	314.26
4	153886.	3390	0.00054000	472.96
5	81250.9	2227	0.0068900	301.48
6	41412.9	3454	0.00066000	89.033
7	13711.9	2465	0.00059000	100.37

Summary for solid

tbdcat	Sum	Count	Minimum	Maximum
1	9597	3853	0	46
2	4406	5973	0	19
3	968	4208	0	7
4	1144	3390	0	6
5	688	2227	0	6
6	460	3454	0	5
7	185	2465	0	3

Summary for %BK

tbdcat	Sum	Count	Minimum	Maximum
1	9537.09	3853	4.9002e-05	30.467
2	4373.95	5973	1.5220e-06	12.920
3	909.889	4208	4.1428e-06	3.2908
4	963.022	3390	2.3323e-07	3.4247
5	493.194	2227	6.6962e-07	2.1807
6	247.766	3454	9.2927e-07	1.0681
7	71.1912	2465	5.0235e-07	0.78133

Summary for %EX

tbdcat	Sum	Count	Minimum	Maximum
1	3.11937	3853	0	0.014974
2	80.4778	5973	3.4804e-07	0.28504
3	75.2558	4208	1.4490e-06	0.21231

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4	179.340	3390	6.7798e-08	0.90440
5	206.085	2227	1.0455e-06	0.99164
6	196.263	3454	4.5505e-06	0.55676
7	111.349	2465	6.3376e-06	1.0815

bound 16 leve 90@

Profile likelihood bounds for parameter 16 (cola02w10)

MLE	0.4666
95% lower bound	0.3958
95% upper bound	0.5413

bound 18 @

Profile likelihood bounds for parameter 18 (e30)

MLE	-0.1849	exp(MLE)	0.8312
95% lower bound	-0.2956		
exp(bound)	0.7441		
95% upper bound	-0.07888		
exp(bound)	0.9242		

bound 19 @

Profile likelihood bounds for parameter 19 (lage70)

MLE	-1.621	exp(MLE)	0.1977
95% lower bound	-2.109		
exp(bound)	0.1213		
95% upper bound	-1.123		
exp(bound)	0.3254		

bound 21 @

Profile likelihood bounds for parameter 21 (msex)

MLE	0.2465
95% lower bound	0.1372
95% upper bound	0.3554

! Gender-specific dose response slopes

line 1 sex*cola02w10 @

pline 1 @

fit @

Iter	Step	Deviance
0	0	15243.982
1	0	14739.813
2	0	14735.972
3	0	14735.954
4	0	14735.954

Piece-wise exponential regression

Product additive excess model { T0 * (1 + T1 + T2 + ...) }

solid is used for cases

py10k is used for person years

Parameter Summary Table

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# Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0				
1 sex_1.....	5.338	0.02008	265.8	< 0.001
2 sex_2.....	4.547	0.01802	252.3	< 0.001
3 naga.....	-0.04658	0.0194	-2.401	0.0163
4 nic * hiro.....	-0.07415	0.02099	-3.532	< 0.001
5 nic * naga.....	-0.03794	0.03863	-0.9822	0.326
6 sex_1 * lage70.....	5.875	0.1728	33.99	< 0.001
7 sex_2 * lage70.....	3.652	0.1265	28.86	< 0.001
8 sex_1 * lage70sq.....	0.04284	0.2847	0.1505	> 0.5
9 sex_2 * lage70sq.....	0.1152	0.181	0.6365	> 0.5
10 sex_1 * lage70qsp.....	-13.34	1.419	-9.406	< 0.001
11 sex_2 * lage70qsp.....	-3.551	1.041	-3.412	< 0.001
12 sex_1 * e30.....	-0.1721	0.01059	-16.26	< 0.001
13 sex_2 * e30.....	-0.07426	0.01071	-6.936	< 0.001
14 sex_1 * e30sq.....	0.007165	0.004633	1.546	0.122
15 sex_2 * e30sq.....	0.004648	0.004356	1.067	0.286
Linear term 1				
16 sex_1 * cola02w10.....	0.3516	0.04704	7.475	< 0.001
17 sex_2 * cola02w10.....	0.5817	0.06195	9.389	< 0.001
Log-linear term 1				
18 e30.....	-0.1850	0.0636	-2.909	0.00363
19 lage70.....	-1.621	0.3058	-5.3	< 0.001

Records used 25570

Deviance 14735.954
Pearson Chi2 43595.872

Degrees of freedom 25551

bound 16 @

Profile likelihood bounds for parameter 16 (sex_1 * cola02w10)

MLE 0.3516

95% lower bound 0.2794
95% upper bound 0.4311

bound 17 @

Profile likelihood bounds for parameter 17 (sex_2 * cola02w10)

MLE 0.5817

95% lower bound 0.483
95% upper bound 0.6883

! L-Q dose response

line 1 cola02w10 lodose*cola02wsq=0 hidose*cola02w10 @
pline 1 %con=1 mssex @

fit @

Iter	Step	Deviance
0	0	15243.978
1	0	14751.755
2	0	14735.989
3	0	14735.861
4	0	14735.861
5	0	14735.861

Piece-wise exponential regression

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Product additive excess model { T0 * (1 + T1 + T2 + ...) }

solid is used for cases
pyl0k is used for person years

Parameter Summary Table

# Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0				
1 sex_1.....	5.338	0.02011	265.4	< 0.001
2 sex_2.....	4.548	0.01806	251.8	< 0.001
3 naga.....	-0.04665	0.0194	-2.405	0.0162
4 nic * hiro.....	-0.07454	0.02103	-3.544	< 0.001
5 nic * naga.....	-0.03828	0.03865	-0.9906	0.322
6 sex_1 * lage70.....	5.874	0.1728	33.99	< 0.001
7 sex_2 * lage70.....	3.652	0.1265	28.86	< 0.001
8 sex_1 * lage70sq.....	0.04366	0.2847	0.1533	> 0.5
9 sex_2 * lage70sq.....	0.1157	0.181	0.6393	> 0.5
10 sex_1 * lage70qsp.....	-13.35	1.419	-9.407	< 0.001
11 sex_2 * lage70qsp.....	-3.552	1.041	-3.412	< 0.001
12 sex_1 * e30.....	-0.1722	0.01058	-16.27	< 0.001
13 sex_2 * e30.....	-0.07428	0.0107	-6.941	< 0.001
14 sex_1 * e30sq.....	0.007165	0.004633	1.547	0.122
15 sex_2 * e30sq.....	0.004641	0.004355	1.066	0.287
Linear term 1				
16 cola02w10.....	0.4612	0.04722	9.768	< 0.001
17 lodose * cola02wsq.....	0.000	Fixed	1.598	0.11
18 hidose * cola02w10.....	0.01955	0.06451	0.3031	> 0.5
Log-linear term 1				
19 e30.....	-0.1851	0.06368	-2.907	0.00365
20 lage70.....	-1.620	0.306	-5.293	< 0.001
Linear product term 1				
21 %CON.....	1.000	Aliased		
22 msex.....	0.2480	0.0678	3.658	< 0.001

Records used 25570

Deviance 14735.861
Pearson Chi2 43453.591 Degrees of freedom 25550

null @
para 17 free @
fit @

Iter	Step	Deviance
0	0	14735.861
1	0	14733.232
2	0	14733.197
3	0	14733.196
4	0	14733.195

Piece-wise exponential regression
Product additive excess model { T0 * (1 + T1 + T2 + ...) }

solid is used for cases
pyl0k is used for person years

Parameter Summary Table

# Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0				

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1	sex_1.....	5.343	0.02019	264.6	< 0.001
2	sex_2.....	4.554	0.01826	249.5	< 0.001
3	naga.....	-0.04960	0.01947	-2.548	0.0108
4	nic * hiro.....	-0.08018	0.02123	-3.776	< 0.001
5	nic * naga.....	-0.04110	0.03867	-1.063	0.288
6	sex_1 * lage70.....	5.871	0.1728	33.98	< 0.001
7	sex_2 * lage70.....	3.646	0.1265	28.82	< 0.001
8	sex_1 * lage70sq.....	0.04851	0.2846	0.1704	> 0.5
9	sex_2 * lage70sq.....	0.1225	0.1804	0.6792	0.497
10	sex_1 * lage70qsp.....	-13.35	1.419	-9.411	< 0.001
11	sex_2 * lage70qsp.....	-3.559	1.041	-3.419	< 0.001
12	sex_1 * e30.....	-0.1723	0.01055	-16.32	< 0.001
13	sex_2 * e30.....	-0.07446	0.01062	-7.01	< 0.001
14	sex_1 * e30sq.....	0.007167	0.004632	1.547	0.122
15	sex_2 * e30sq.....	0.004623	0.00435	1.063	0.288

Linear term 1					
16	cola02w10.....	0.3436	0.07885	4.358	< 0.001
17	lodose * cola02wsq.....	0.09758	0.05838	1.671	0.0946
18	hidose * cola02w10.....	0.1264	0.08912	1.418	0.156

Log-linear term 1					
19	e30.....	-0.1977	0.06434	-3.072	0.00213
20	lage70.....	-1.618	0.3057	-5.293	< 0.001

Linear product term 1					
21	%CON.....	1.000	Aliased		
22	msex.....	0.2486	0.06779	3.668	< 0.001

Records used		25570		
Deviance		14733.195		
Pearson Chi2	43173.748	Degrees of freedom	25549	

lrt

LR statistic	2.665	Degrees of freedom	1
P value	0.103		

para 16=1 @
logl 1 +%con @
fit @

Iter	Step	Deviance
0	0	15155.895
1	0	14765.424
2	0	14733.704
3	0	14733.201
4	0	14733.196
5	0	14733.195
6	0	14733.195

Piece-wise exponential regression
Product additive excess model { T0 * (1 + T1 + T2 + ...) }

solid is used for cases
pyl0k is used for person years

Parameter Summary Table

#	Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0					
1	sex_1.....	5.343	0.02019	264.6	< 0.001
2	sex_2.....	4.554	0.01826	249.5	< 0.001
3	naga.....	-0.04960	0.01947	-2.548	0.0108
4	nic * hiro.....	-0.08019	0.02123	-3.776	< 0.001

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5	nic * naga.....	-0.04110	0.03867	-1.063	0.288
6	sex_1 * lage70.....	5.871	0.1728	33.98	< 0.001
7	sex_2 * lage70.....	3.646	0.1265	28.82	< 0.001
8	sex_1 * lage70sq.....	0.04851	0.2846	0.1704	> 0.5
9	sex_2 * lage70sq.....	0.1225	0.1804	0.6792	0.497
10	sex_1 * lage70qsp.....	-13.35	1.419	-9.411	< 0.001
11	sex_2 * lage70qsp.....	-3.559	1.041	-3.419	< 0.001
12	sex_1 * e30.....	-0.1723	0.01055	-16.32	< 0.001
13	sex_2 * e30.....	-0.07446	0.01062	-7.01	< 0.001
14	sex_1 * e30sq.....	0.007167	0.004632	1.547	0.122
15	sex_2 * e30sq.....	0.004623	0.00435	1.063	0.288

Linear term 1					
16	cola02w10.....	1.000	Aliased		
17	lodose * cola02wsq.....	0.2841	0.2257	1.259	0.208
18	hidose * cola02w10.....	0.3679	0.325	1.132	0.258

Log-linear term 1					
19	%CON.....	-1.068	0.2295	-4.655	< 0.001
20	e30.....	-0.1977	0.06434	-3.073	0.00212
21	lage70.....	-1.618	0.3057	-5.293	< 0.001

Linear product term 1					
22	%CON.....	1.000	Aliased		
23	msex.....	0.2486	0.06779	3.667	< 0.001

Records used	25570		
Deviance	14733.195		
Pearson Chi2	43173.779	Degrees of freedom	25549

bound 17 @

Profile likelihood bounds for parameter 17 (lodose * cola02wsq)

MLE	0.2841
95% lower bound	-0.00158
95% upper bound	0.8657

! Solid cancer EAR model

add @

line 1 cola02w10 cola02wsq=0 @
logl 1 e30 lage70 @
pline 1 %con=1 msex @

fit @

Iter	Step	Deviance
0	0	15232.746
1	0	14868.447
2	0	14757.953
3	0	14741.646
4	0	14739.949
5	0	14739.933
6	0	14739.933
7	0	14739.933

Piece-wise exponential regression
Additive model { T0 + T1 + T2 + ... }

solid is used for cases

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pyl0k is used for person years

Parameter Summary Table

# Name	Estimate	Std.Err.	Test Stat.	P value
Log-linear term 0				
1 sex_1.....	5.346	0.02014	265.5	< 0.001
2 sex_2.....	4.545	0.01842	246.7	< 0.001
3 naga.....	-0.04565	0.02039	-2.239	0.0252
4 nic * hiro.....	-0.07679	0.02105	-3.648	< 0.001
5 nic * naga.....	-0.04255	0.03886	-1.095	0.274
6 sex_1 * lage70.....	5.713	0.1865	30.64	< 0.001
7 sex_2 * lage70.....	3.671	0.1368	26.84	< 0.001
8 sex_1 * lage70sq.....	-0.4936	0.3428	-1.44	0.15
9 sex_2 * lage70sq.....	0.2283	0.1959	1.165	0.244
10 sex_1 * lage70qsp.....	-12.10	1.511	-8.008	< 0.001
11 sex_2 * lage70qsp.....	-3.818	1.1	-3.472	< 0.001
12 sex_1 * e30.....	-0.1735	0.01072	-16.18	< 0.001
13 sex_2 * e30.....	-0.07293	0.01098	-6.643	< 0.001
14 sex_1 * e30sq.....	0.007826	0.004752	1.647	0.0996
15 sex_2 * e30sq.....	0.003865	0.004536	0.852	0.394
Linear term 1				
16 cola02w10.....	51.63	4.982	10.36	< 0.001
17 cola02wsq.....	0.000	Fixed	1.164	0.244
Log-linear term 1				
18 e30.....	-0.2805	0.06215	-4.514	< 0.001
19 lage70.....	2.406	0.2731	8.809	< 0.001
Linear product term 1				
20 %CON.....	1.000	Aliased		
21 msex.....	0.1622	0.06988	2.321	0.0203
Records used 25570				
Deviance 14739.933				
Pearson Chi2 39853.774 Degrees of freedom 25551				

bound 16 leve 90@

Profile likelihood bounds for parameter 16 (cola02w10)

MLE	51.63
95% lower bound	43.37
95% upper bound	60.41

bound 18 @

Profile likelihood bounds for parameter 18 (e30)

MLE	-0.2805	exp(MLE)	0.7554
95% lower bound	-0.3906		
exp(bound)	0.6767		
95% upper bound	-0.1742		
exp(bound)	0.8401		

bound 19 @

Profile likelihood bounds for parameter 19 (lage70)

MLE	2.406	exp(MLE)	11.09
95% lower bound	1.959		

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	exp (bound)	7.092
95% upper bound		2.867
	exp (bound)	17.58

bound 21 @

Profile likelihood bounds for parameter 21 (msex)

MLE	0.1622
95% lower bound	0.04631
95% upper bound	0.2837