```
. use gastric

. stset survtime, failure(died==1) id(id)

             id:  id
   failure event:  died == 1
obs. time interval:  (survtime[_n-1], survtime]
 exit on or before:  failure

─────────────────────────────────────────────
      95  total obs.
       0  exclusions
─────────────────────────────────────────────
      95  obs. remaining, representing
      95  subjects
      78  failures in single failure-per-subject data
   50268  total analysis time at risk, at risk from t =          0
                          earliest observed entry t =          0
                           last observed exit t =        1519

. sts graph , by(trtmt) haz

        failure _d:  died == 1
   analysis time _t:  survtime
             id:  id
```
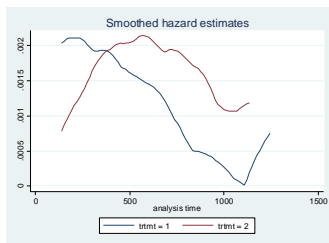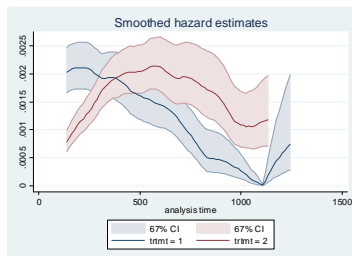


```
. sts graph , by(trtmt) haz cl level(67)

        failure _d:  died == 1
   analysis time _t:  survtime
             id:  id

. // looks like a challenge to analyze
```
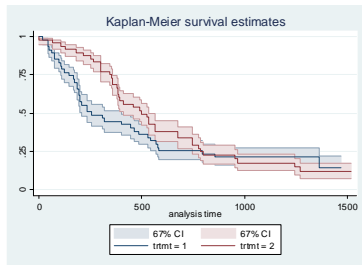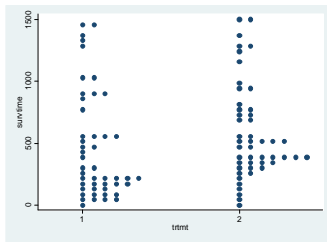
Slide 1

```
. sts graph , by(trtmt) ci level(67)

        failure _d:  died == 1
   analysis time _t:  survtime
               id:  id

. // useful, but perhaps a bit misleading
```

Kaplan-Meier survival estimates

Slide 2

```
. // one of my favorite Stata commands
. dotplot survtime , over(trtmt)
```


Slide 3

```
. gen t_by_d = 2*died + trtmt

. dotplot survtime , over(t_by_d)
```
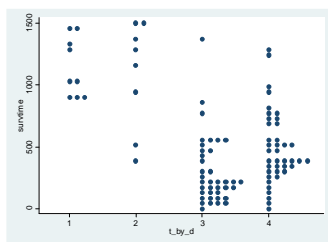
```
. stcox trtmt

         failure _d:  died == 1
   analysis time _t:  survtime
                id:  id

Iteration 0:   log likelihood = -303.0211
Iteration 1:   log likelihood = -302.55251
Iteration 2:   log likelihood = -302.55245
Refining estimates:
Iteration 0:   log likelihood = -302.55245

Cox regression -- Breslow method for ties

No. of subjects =          95                    Number of obs   =        95
No. of failures =          78
Time at risk    =       50268
                                                 LR chi2(1)      =      0.94
Log likelihood  =  -302.55245                    Prob > chi2     =    0.3330

        _t |  Haz. Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------+----------------------------------------------------------------
     trtmt |   .8020821    .1823661    -0.97   0.332     .5136705    1.252429

. // not surprising trtmt is not significant
```

```
. // following is useful, but not entirely so
. stcox trtmt, tvc(trtmt) texp(log(survtime/500)) nohr

         failure _d:  died == 1
   analysis time _t:  survtime
                id:  id

Iteration 0:   log likelihood = -303.0211
Iteration 1:   log likelihood = -299.79577
Iteration 2:   log likelihood = -299.66794
Iteration 3:   log likelihood = -299.6673
Iteration 4:   log likelihood = -299.6673
Refining estimates:
Iteration 0:   log likelihood = -299.6673

Cox regression -- Breslow method for ties

No. of subjects =          95                    Number of obs   =        95
No. of failures =          78
Time at risk    =       50268
                                                 LR chi2(2)      =      6.71
Log likelihood  =   -299.6673                    Prob > chi2     =    0.0350

        _t |    Coef.     Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------+----------------------------------------------------------------
main       |
     trtmt |   .1037678    .271751      0.38   0.703    -.4288543    .6363899
-----------+----------------------------------------------------------------
tvc        |
     trtmt |   .6039861    .2813794     2.15   0.032     .0524926    1.15548

Note: variables in tvc equation interacted with log(survtime/500)
```

```
. estimates store haz_trend

. stcox , estimate

         failure _d:  died == 1
   analysis time _t:  survtime
                id:  id

Iteration 0:   log likelihood = -303.0211
Refining estimates:
Iteration 0:   log likelihood = -303.0211

Cox regression -- Breslow method for ties

No. of subjects =          95                    Number of obs   =        95
No. of failures =          78
Time at risk    =       50268
                                                 LR chi2(0)      =      0.00
Log likelihood  =   -303.0211                    Prob > chi2     =        .

        _t |  Haz. Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------+----------------------------------------------------------------

. lrtest haz_trend
(. does not contain matrix e(V); rank = 0 assumed)

Likelihood-ratio test                            LR chi2(2)  =       6.71
(Assumption: _ nested in haz_trend)              Prob > chi2 =     0.0350
```

```
. // but only marginally so since the model
. // is largely "suggested by the data"
. stsplit t_int , at(0 100 200 300 400 500 700)
(333 observations (episodes) created)

. xi , noomit:stcox i.t_int*trtmt
i.t_int*trtmt    _It_IXtrt_#    (coded as above)

        failure _d:  died == 1
   analysis time _t:  survtime
              id:  id

Cox regression -- Breslow method for ties

No. of subjects =        95            Number of obs  =     428
No. of failures =        78
Time at risk    =     50268
                                       LR chi2(7)     =    20.76
Log likelihood  =  -292.64068          Prob > chi2    =   0.0041
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_It_Int_0	.0004813	.	.	.	.	.
_It_Int_100	2.34e-11	.	.	.	.	.
_It_Int_200	.622626	.	.	.	.	.
_It_Int_300	.0046558	.	.	.	.	.
_It_Int_400	2.4289	.	.	.	.	.
_It_Int_500	.1957425	.	.	.	.	.
_It_Int_700	(omitted)					
trtmt	2.790375	1.862668	1.54	0.124	.7541496	10.32447
_It_IXtrt_0	.0834932	.0863983	-2.40	0.016	.0109858	.6345555
_It_IXtr-100	.0687158	.0638225	-2.88	0.004	.0111294	.4242709
_It_IXtr-200	.1597784	.1620896	-1.81	0.071	.0218778	1.166897
_It_IXtr-300	1.346196	1.365914	0.29	0.770	.1842633	9.83507
_It_IXtr-400	.2634783	.2562418	-1.37	0.170	.0391671	1.772426
_It_IXtr-500	.3917572	.3479233	-1.06	0.291	.0687158	2.233455
_It_IXtr-700	(omitted)					

```
. // not quite what we want (get rid of main effects of t_int)
```

```
. stcox  _It_IXtrt_0 _It_IXtrt_100 _It_IXtrt_200 _It_IXtrt_300 _It_IXtrt_400 _It
> _IXtrt_500 _It_IXtrt_700

        failure _d:  died == 1
   analysis time _t:  survtime
              id:  id

Cox regression -- Breslow method for ties

No. of subjects =        95            Number of obs  =     428
No. of failures =        78
Time at risk    =     50268
                                       LR chi2(7)     =    20.76
Log likelihood  =  -292.64068          Prob > chi2    =   0.0041
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_It_IXtrt_0	.2329775	.1842141	-1.84	0.065	.0494622	1.097374
_It_IXtr-100	.1917429	.1238262	-2.56	0.011	.0540779	.6798593
_It_IXtr-200	.4458417	.3405774	-1.06	0.290	.0997585	1.99256
_It_IXtr-300	3.756391	2.870406	1.73	0.083	.8401066	16.79605
_It_IXtr-400	.7352033	.5199836	-0.43	0.664	.1838156	2.940577
_It_IXtr-500	1.09315	.6403451	0.15	0.879	.3467871	3.44585
_It_IXtr-700	2.790375	1.862668	1.54	0.124	.7541497	10.32447

```
. // a more complete description of the hazards
. streg  _It_Int_0 _It_Int_100 _It_Int_200 _It_Int_300 _It_Int_400 _It_Int_500 _
> It_Int_700 _It_IXtrt_0 _It_IXtrt_100 _It_IXtrt_200 _It_IXtrt_300 _It_IXtrt_400
> _It_IXtrt_500 _It_IXtrt_700 , d(exp) nocon

        failure _d:  died == 1
   analysis time _t:  survtime
              id:  id

Exponential regression -- log relative-hazard form

No. of subjects =        95            Number of obs  =     428
No. of failures =        78
Time at risk    =     50268
                                       Wald chi2(14)  =   3110.52
Log likelihood  =  -130.3291           Prob > chi2    =   0.0000
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_It_Int_0	.0078801	.0078801	-4.84	0.000	.00111	.0559413
_It_Int_100	.017665	.0144234	-4.94	0.000	.0035654	.0875221
_It_Int_200	.0037254	.0043017	-4.84	0.000	.0003875	.0358139
_It_Int_300	.0002533	.0003865	-5.74	0.000	.000015	.0042882
_It_Int_400	.0028501	.0031865	-5.24	0.000	.0003186	.0254996
_It_Int_500	.0017706	.0017192	-6.53	0.000	.000264	.0118749
_It_Int_700	.0002342	.0002815	-6.96	0.000	.0000222	.0024697
_It_IXtrt_0	.2332762	.184421	-1.84	0.066	.0495378	1.098511
_It_IXtr-100	.1961061	.1265853	-2.52	0.012	.0653402	.6949236
_It_IXtr-200	.4416788	.3373377	-1.07	0.285	.0988532	1.973433
_It_IXtr-300	3.720631	2.841679	1.72	0.085	.8327233	16.62389
_It_IXtr-400	.7410016	.5239672	-0.42	0.672	.1853228	2.962849
_It_IXtr-500	1.048249	.6137918	0.08	0.936	.3326993	3.30276
_It_IXtr-700	2.613402	1.742268	1.44	0.150	.7075197	9.653258

```
note: no constant term was estimated in the main equation

. // roughly, there is some significant trtmt effect during the first
. // 100 days, but not much after that
```

Should have said first 200 days