

## Help gest

### Title

gest - G-estimation of accelerated failure-time models to control for the healthy worker survivor effect in occupational studies.

### Syntax

```
gest outcomevar expvar, covars(varlist) range(numlist) countexp(real) active(varname) id(varname)  
follow(varname) time(varname) bootstraps(integer) ci(name) [cens(varname) censpred (varlist)  
stat(name) saving(string)
```

### Description

**gest** runs a g-estimation procedure on an accelerated failure-time model to estimate the causal effect of a dichotomous time-varying exposure (*expvar*) over a given duration of time (*countexp*) on survival based on a method introduced by Robins et al. (1992) and adapted by Chevrier et al. (2012). The procedure adjusts for competing risk and administrative censoring. The data should be in long format with every observation (row) representing the same amount of time.

### Options

#### *Required*

**covars** (*varlist*) specifies time-varying and fixed covariates such as intermittent time off work, prior exposure, etc.

**range** (*numlist*) provides the lower and upper bound (in this order) of the search interval for the unknown accelerated failure-time model estimate ( ). Note that a reasonable search interval must be selected in order to obtain a valid estimate by remembering that the model assumes that every unit of exposure affects survival time by . We suggest trying an interval ranging between -0.5 and 0.5 as a starting point.

**countexp** (*real*) represents the number of time units to be used as the counterfactual exposure period.

**active** (*varname*) is a variable identifying employment status (coded as 1 if active and 0 otherwise).

**id** (*varname*) is a numeric value that identifies study participants.

**follow** (*varname*) identifies time periods in chronological order for each participant (e.g. first year of follow-up = 1, second year=2, etc.).

**time** (*varname*) identifies observations in a chronological order (e.g. calendar year).

**bootstraps** (*integer*) indicates the number of bootstraps to be performed to obtain 95% confidence intervals.

**ci** (*name*) specifies the types of confidence intervals to be computed. Choices include normal, percentile, bc (bias-corrected), bca (bias-corrected and accelerated) or all.

### *Optional*

**cens** (*varname*) may be used to identify censoring due to loss to follow-up or competing risk (1=censored, 0=uncensored). Only the time period (e.g. person-year) during which censoring occurs should be identified with other observations set as 0. This variable should not identify participants who are administratively censored (due to end of follow-up).

**censpred** (*varlist*) includes variables to be used as predictors of remaining uncensored.

**stat** (*name*) may be used to identify the statistic to be estimated. Choices include psi (the unknown accelerated failure-time parameter), sr (survival ratio), hr (hazard ratio) or all.

**saving** (*string*) may be used to save a dataset containing the bootstrapped values of the estimated statistics.

**graph** (*name*) Coming up!

### Example

Coming up!

### Saved results

scalars

**gest** saves the following in r()

r(n\_skip)      Number of bootstraps that were skipped due to non-convergence

r(m\_wts)      Mean of inverse probability weights

r(sd\_wts)      Standard deviation of inverse probability weights

r(min\_wts)      Smaller inverse probability weight

r(max\_wts)      Larger inverse probability weight

Matrix

e(skipped)      Identifies which bootstraps were skipped to allow for further investigation

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### References

Chevrier J, Picciotto S, Eisen EA. 2012. A comparison of standard methods with g-estimation of accelerated failure-time models to address the healthy worker survivor effect: Application in a cohort of autoworkers exposed to metalworking fluids. *Epidemiology*; 23(2): 212-219.

Robins J, Blevins D , Ritter G, Wulfsohn M. 1992. G-estimation of the effect of prophylaxis therapy for *Pneumocystis carinii* pneumonia on the survival of AIDS patients. *Epidemiology*; 3: 319-336.