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##  This document describes the function iivwGEE that implements the IIV-weighted estimation
and doubly weighted estimation methods for model (5.1), as well as the form of the input data.

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##  Corresponding Author: Yayuan Zhu, Ph.D.

##  Department of Statistics and Actuarial Science

##  University of Waterloo

##  Waterloo, ON N2L 3G1, Canada.

##  E-mail: yayuan.zhu@uwaterloo.ca

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```

Data Example

id	visit.time	A	Y	weight
1	0.09	0	1	5.156184
1	0.26	0	1	19.133358
1	0.52	0	0	4.971385
1	1.62	0	0	3.549988
1	1.81	0	0	86.425947
1	2.20	0	0	13.880862
1	2.24	0	0	11.750408
1	2.65	0	0	4.237465
1	2.71	0	0	10.362656
1	3.14	0	0	36.369958
1	3.25	0	0	11.794009
1	3.35	0	0	36.222299
1	3.87	0	0	3.634260
1	3.91	0	0	32.251257
1	4.18	0	0	46.446658
1	4.23	0	0	66.262965
1	4.66	0	0	12.151974
1	4.98	0	0	26.410940

Format

"id"   subject id.

"visit.time"   times where people visit and responses Y (failed or alive) are observed; it is noted that visit times are irregularly-spaced.

"A"   time-fixed binary treatment variable: 1=active treatment and 0=inactive treatment.

"Y"   response (survival indicator) defined as I(T>visit.time), 0=failed, 1=alive.

"weight"   to implement the IIV-weighted GEE method, weight = IIV weight; the dataset shown above is an example of Case A; in Case B, it is noted that the IIV weights after an observed failure are set as 1. To implement the doubly weighted estimation method, weight = the product of IIV weight and IPT weight.

Function   "iivwGEE"

Description

R function for implementing the IIV-weighted GEE and doubly weighted estimation methods for parameters estimation.

Usage

iivwGEE(dataset, surv.fn, theta.init, grid)

Arguments

"dataset"   data frame has the same format as the data example provided above, sorted by id and by visit.time within id.

"surv.fn"   a parametric survival function with the parameter theta of interest for estimation.

"theta.init"   initial value of theta for numerically solving the estimating function by the Newton-Raphson Method.

"grid"   grid used for discretizing time scale in our simulations, e.g. grid = 100 if a grid of 100 per unit is used. The grid is used to speed up computation by defining it so that each visit time is a point on the grid.

Example

```
> library(nleqslv)

> surv.fn <- function(dataset, theta, grid){

+    theta0 <- theta[1]

+    theta1 <- theta[2]

+    surv <- (1-exp(theta0+theta1*dataset$A))^(grid*dataset$visit.time)

+    return(surv)

+ }

> theta.est <- iivwGEE(simu.data, surv.fn=surv.fn, theta.init=c(-1,-1), grid=100)

> print(theta.est)

[1] -3.645703 -2.101242
```