addregmc

Use additive hazard regression for estimation of transition probabilities in Markov chains

Description

"addregmc" uses results from additive hazard regression for estimation of transition probabilities in Markov chains

Usage

```
addregmc(addregmce.list,covardata,fromtime=NULL,estcovar=T)
```

Details

The Additive hazards model (Aalen's model) is an alternative to proportional hazards model (Cox model).

"addregmc" is a package for estimation of transition propabilities in Markov chains.

Value

an object of class `"addregmc"` with estimated transition probabilities.

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

Documentation is distributed with the package: "Documentation for the Addreg package - A R and S-PLUS package for additive survival analysis"

Odd O. Aalen "A linear regression model for the analysis of life times", *Statistics in Medicine* 8 907-925, 1989

Odd O. Aalen "Further results on the non - parametric linear regression model in survival analysis", *Statistics in Medicine* 12 1569-1588,1993

O. O. Aalen, Ø. Borgan, H. Fekjær "Covariate adjustment of event histories estimated from Markov chains: The additive approach." *Biometrics* 57 108-116,2001

See Also

A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make addregmc objects:
overg01.mce <- addregmc(overg01,1,2)
overg12.mce <- addregmc(overg12,2,3)
overg02.mce <- addregmc(overg02,1,3)

# We run overall analysis:
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
summary(res,esttime=12,confint=T)
plot(res2,fromto=c(1,2),stoptime=55)
```

---

addregmce

Make "addregmce"-object with transition information (for one transition in a Markov chain)

Description

Makes "addregmce"-object for use in additive hazard regression estimation of Markov chains (with "addregmc"-function)

Usage

```
addregmce(addreg.object,from,to)
```

Arguments

`addreg.object`	Additive hazard regression object ("addreg"-object)

`from`	Number of "from"-state. (each state is given one unique number)
`to`	Number of "to"-state. (each state is given one unique number)

Details

The Additive hazards model (Aalen's model) is an alternative to the proportional hazards model (Cox model).

"addregmc" is a package for estimation transition propabilities in Markov chains.

Value

an object of class `"addreg"` with information about one transition.

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

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See Also

A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make addregmce objects:
```

```
overg01.mce <- addregmce(overg01,1,2)
overg12.mce <- addregmce(overg12,2,3)
overg02.mce <- addregmce(overg02,1,3)

# We run overall analysis:
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
summary(res,esttime=12,confint=T)
plot(res2,fromto=c(1,2),stoptime=55)
```

---

plot.addregmc

Plot transition probabilitys from an "addregmc" object

Description

Plot transitions probabilities from an "addregmc"-object (with results from additive hazard regression for estimation of transition probabilities in Markov chains)

Usage

```
plot.addregmc(addregmc.object,fromto=NULL,stoptime=NULL,confint=F,

transtitle=NULL,xlab="Time",ylab="Probability",standylim=F)
```

Arguments

`addregmc.object`	An "addregmc"-object
`fromto`	Vector with number of state to plot from and to. If NULL plot all transitions. Default is NULL
`stoptime`	The place where the drawing should stop. Default is the last estimate.
`confint`	Plot confident's interval. Default is F
`transtitle`	Title of transitions. Default is made my number of stats (transtitle=NULL)
`xlab`	Title for the x-axis. Default is "Time"
`ylab`	Title for the y-axis. Default is "Probability"
`standylim`	Use standard y-scale from 0 to 1 (or from 0 to top of confident's interval). Default is T

Details

The Additive hazards model (Aalen's model) is an alternative to the proportional hazards model (Cox model).

"addregmc" is a package for estimation of transition propabilities in Markov chains.

Value

an object of class `"addregmc"` with estimated transition probabilities.

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

Documentation is distributed with the package: "Documentation for the Addreg package - A R and S-PLUS package for additive survival analysis"

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See Also

A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make addregmc objects:
overg01.mce <- addregmc(overg01,1,2)
overg12.mce <- addregmc(overg12,2,3)
overg02.mce <- addregmc(overg02,1,3)
```

```
# We run overall analysis:
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
plot(res,esttime=12,confint=T)
plot(res2,fromto=c(1,2),stoptime=55)
```

---

plot.addregmce

Plot information about an "addregmce"-object

Description

Plot information about an "addregmce"-object with from and to state (for one transition in a Markov chain)

Usage

```
plot_addregmce(addregmce.object,...)
```

Arguments

`addreg.object`	Object of type "addregmce"
`...`	Options as those who can be given as arguments to `plot.addreg'.

Details

The Additive hazards model (Aalen's model) is an alternative to the proportional hazards model (Cox model).

"addregmc" is a package for estimation of transition propabilities in Markov chains.

Value

an object of class `"addregmce"`(Invisible).

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

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A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make plot_addregmce objects:
overg01.mce <- plot_addregmce(overg01,1,2)
overg12.mce <- plot_addregmce(overg12,2,3)
overg02.mce <- plot_addregmce(overg02,1,3)

# We run overall analysis:
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
summary(res,esttime=12,confint=T)
plot(res2,fromto=c(1,2),stoptime=55)
```

---

print.addregmc

Print an "addregmc" object

Description

Print possible transitions in an "addregmc" with results from additive hazard regression for estimation of transition probabilities in Markov chains

Usage

```
print.addregmc(addregmc.object)
```

Arguments

`addregmc.object`	An "addregmc"-object

Details

The Additive hazards model (Aalen's model) is an alternative to the proportional hazards model (Cox model).

"addregmc" is a package for estimation transition propabilities in Markov chains.

Value

an object of class `"addregmc"` with estimated transition probabilities.

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

Documentation is distributed with the package: "Documentation for the Addreg package - A R and S-PLUS package for additive survival analysis"

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See Also

A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make addregmc objects:
overg01.mce <- addregmc(overg01,1,2)
overg12.mce <- addregmc(overg12,2,3)
overg02.mce <- addregmc(overg02,1,3)

# We run overall analysis:
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
summary(res,esttime=12,confint=T)
plot(res2,fromto=c(1,2),stoptime=55)
```

---

print.addregmce

Print information about a "print_addregmce"-object

Description

Print information about an "addregmce"-object with from and to state (for one transition in a Markov chain)

Usage

```
print_addregmce(addregmce.object)
```

Arguments

`addreg.object`	Object of type "addregmce"

Details

The Additive hazards model (Aalen's model) is an alternative to the proportional hazards model (Cox model).

"addregmc" is a package for estimation transition of propabilities in Markov chains. "addregmce" is a object for use in "addregmc"

Value

an object of class `"addregmce"`(Invisible).

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

Documentation is distributed with the package: "Documentation for the Addreg package - A R and S-PLUS package for additive survival analysis"

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See Also

A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make print_addregmce objects:
overg01.mce <- print_addregmce(overg01,1,2)
overg12.mce <- print_addregmce(overg12,2,3)
overg02.mce <- print_addregmce(overg02,1,3)

# We run overall analysis:
```

```
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
summary(res,esttime=12,confint=T)
plot(res2,fromto=c(1,2),stoptime=55)
```

---

summary.addregmc

Summary of an "addregmc" object

Description

Print transitions probabilities from an "addregmc"-object (with results from additive hazard regression for estimation of transition probabilities in Markov chains)

Usage

```
summary.addregmc(addregmc.object,esttime=NULL,confint=F,digits=3)
```

Arguments

`addregmc.object`	An "addregmc"-object
`esttime`	Time to print estimations from. Default is end of study (NULL)
`confint`	Print confident's interval? Default is F
`digits`	Number of digits to print. Default is 3

Details

The Additive hazards model (Aalen's model) is an alternative to proportional hazards model (Cox model).

"addregmc" is a package for estimation of transition propabilities in Markov chains.

Value

an object of class `"addregmc"` with estimated transition probabilities.

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

Documentation is distributed with the package: "Documentation for the Addreg package - A R and S-PLUS package for additive survival analysis"

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See Also

A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make addregmc objects:
overg01.mce <- addregmc(overg01,1,2)
overg12.mce <- addregmc(overg12,2,3)
overg02.mce <- addregmc(overg02,1,3)

# We run overall analysis:
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
summary(res,esttime=12,confint=T)
plot(res2,fromto=c(1,2),stoptime=55)
```

---

summary.addregmce

Print summary information about an "addregmce"-object

Description

Print summary information about an "addregmce"-object (with information for one transition in a Markov chain)

Usage

```
summary_addregmce(addregmce.object,...)
```

Arguments

`addreg.object`	Object of type "addregmce"
`...`	Options as those who can be given as arguments to `summary.addreg'.

Details

The Additive hazards model (Aalen's model) is an alternative to the proportional hazards model (Cox model).

"addregmc" is a package for estimation of transition propabilities in Markov chains. "addregmce" is a object for use in "addregmc"

Value

an object of class `"addregmce"`(Invisible).

Author(s)

Harald Fekjaer, Ørnulf Borgan and Odd O. Aalen (Section of Medical Statistics, University of Oslo, Norway)

References

Documentation is distributed with the package: "Documentation for the Addreg package - A R and S-PLUS package for additive survival analysis"

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See Also

A website for Addreg is available at: http://www.med.uio.no/imb/stat/addreg/

Examples

```
# We perform Additive hazard regression on each transition:
overg01 <-
addreg(Surv(TPu,DP)~Z10+newZ1+newZ2+newZ1Z2,testobs=F,estcovar=T,data
=bmtdata)
overg12 <-
addreg(Surv(TPu,T2u,D3)~low+high+Z8+newZ1+newZ2,testobs=F,estcovar=T,
data=bmtdata[bmtdata$DP==1,])
overg02 <- addreg(Surv(t02,s02)~1,testobs=F,estcovar=T,data=bmtdata)

# We make summary_addregmce objects:
overg01.mce <- summary_addregmce(overg01,1,2)
overg12.mce <- summary_addregmce(overg12,2,3)
overg02.mce <- summary_addregmce(overg02,1,3)

# We run overall analysis:
covardata <-
data.frame(Z10=1,low=0,high=1,Z8=0,newZ1=0,newZ2=0,newZ1Z2=0)
res <-
addregmc(list(overg01.mce,overg12.mce,overg02.mce),covardata,estcovar
=F)

# We look at the results:
summary(res,esttime=12,confint=T)
summary(res2,fromto=c(1,2),stoptime=55)
```