J. Mack Robinson College of Business
GEORGIA STATE UNIVERSITY
Department of Risk Management and Insurance

Life Contingencies' Symbols

`lifecon` 2.1 User Guide

Eddy Trivedi

July 27, 2004

Typesetting actuarial symbols especially from the life contingencies are tough in LaTeX 2$_\varepsilon$. Some need imagination whereas for others there is no easy way of doing it. In an attempt to simplify typesetting the symbols I have created a package called `lifecon`.

The table below lists all the symbols used in Actuarial Mathematics, 2nd Edition (ISBN 0-938959-46-8) along with the LaTeX 2$_\varepsilon$ code needed to generate it. This is the complete list as seen in Appendix 3, page 687 of the text. The symbols which are typeset using `lifecon` are marked. Place this file where LaTeX 2$_\varepsilon$ can find it. This can be the folder in which the LaTeX 2$_\varepsilon$ file is kept or in the `localtexmf` folder. Call the file by placing the command `\usepackage{lifecon}` in the preamble. `lifecon` 2.0 uses the `amsmath` package.

Note:

1. The code works in *math-mode* only. Place the code between $ signs as shown below or in displaymath mode.
2. To use the command `\mathscr{}` you need to include the `mathrsfs` package in the preamble.

Table 1: Life Contingencies' Symbols

Symbol	LaTeX 2$_\varepsilon$ Code	Need `lifecon`?
a	`$a$`	-
$a(x)$	`$a(x)$`	-
$a_{\overline{K}\vert}$	`$a_{\lcroof{K}}$`	Yes
$\bar{a}_{\overline{n}\vert}$	`$\bar{a}_{\lcroof{n}}$`	Yes
$\bar{a}_{P_t}$	`$\bar{a}_{P_{t}}$`	-
$\bar{a}_{\overline{T}\vert}$	`$\bar{a}_{\lcroof{T}}$`	Yes
$\bar{a}_x$	`$\bar{a}_{x}$`	-
$\bar{a}_{W_t}$	`$\bar{a}_{W_{t}}$`	-
$\ddot{a}_x$	`$\ddot{a}_x$`	-
$\bar{a}^r_h$	`$\bar{a}_{h}^{r}$`	-
$\bar{a}^i_{x+t}$	`$\bar{a}_{x+t}^{i}$`	-
$\bar{a}^r_{x+t}$	`$\bar{a}_{x+t}^{r}$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$\ddot{a}_{\overline{K+1}\rceil}$	`$\ddot{a}_{\lcroof{K+1}}$`	Yes
$\ddot{a}_x^{(m)}$	`$\ddot{a}_{x}^{(m)}$`	-
$\mathring{a}_x^{(m)}$	`$\mathring{a}_{x}^{(m)}$`	-
$\ddot{a}_x^{\{m\}}$	`$\ddot{a}_{x}^{\{m\}}$`	-
${}_j\ddot{a}_x$	`${}_{j}\ddot{a}_{x}$`	-
${}_*\ddot{a}_x$	`${}_{*}\ddot{a}_{x}$`	-
$a_{x:\overline{n}\rceil}$	`$a_{x:\lcroof{n}}$` or	Yes
	`$\annimm{x}{n}$`	Yes
$\bar{a}_{x:\overline{n}\rceil}$	`$\bar{a}_{x:\lcroof{n}}$` or	Yes
	`$\anncon{x}{n}$`	Yes
$\ddot{a}_{x:\overline{n}\rceil}$	`$\ddot{a}_{x:\lcroof{n}}$` or	Yes
	`$\anndue{x}{n}$`	Yes
$\ddot{a}_{x:\overline{n}\rceil}^{(m)}$	`$\ddot{a}_{x:\lcroof{n}}^{(m)}$`	Yes
$\mathring{a}_{x:\overline{n}\rceil}^{(m)}$	`$\mathring{a}_{x:\lcroof{n}}^{(m)}$`	Yes
$\ddot{a}_{x:\overline{n}\rceil}^{\{m\}}$	`$\ddot{a}_{x:\lcroof{n}}^{\{m\}}$`	Yes
$\bar{a}_{\overline{x:\overline{n}\rceil}}$	`$\bar{a}_{\overline{x:\lcroof{n}}}$`	Yes
${}^2\bar{a}_{x:\overline{n}\rceil}$	`${}^2\bar{a}_{x:\lcroof{n}}$`	Yes
${}_{n\rceil}a_x$	`${}_{n\rceil}a_{x}$`	-
${}_{n\rceil}\bar{a}_x$	`${}_{n\rceil}\bar{a}_{x}$`	-
${}_{n\rceil}\ddot{a}_x$	`${}_{n\rceil}\ddot{a}_{x}$`	-
${}_{n\rceil}\ddot{a}_x^{(m)}$	`${}_{n\rceil}\ddot{a}_{x}^{(m)}$`	-
$\bar{a}_{xy\rceil z}^{1}$	`$\bar{a}_{xy\rceil z}^{1}$`	-
$\ddot{a}_{xy}^{(m)}$	`$\ddot{a}_{xy}^{(m)}$`	-
$\ddot{a}_{xy:\overline{n}\rceil}$	`$\ddot{a}_{xy:\lcroof{n}}$`	Yes
${}^2\ddot{a}_{xy:\overline{n}\rceil}$	`${}^2\ddot{a}_{xy:\lcroof{n}}$`	Yes
$\bar{a}_{x\rceil y}$	`$\bar{a}_{x\rceil y}$`	-
$\bar{a}_{\overline{x_1x_2x_3}}$	`$\bar{a}_{\overline{x_{1}x_{2}x_{3}}}$`	-
$(aA)(x)$	`$(aA)(x)$`	-
$(aA)_t$	`$(aA)_{t}$`	-
$(aC)_t$	`$(aC)_{t}$`	-
$(aF)_t$	`$(aF)_{t}$`	-
$(aU)_t$	`$(aU)_{t}$`	-
$(aV)(x)$	`$(aV)(x)$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$(aV)_t$	`$(aV)_{t}$`	-
$A(h)$	`$A(h)$`	-
A_t	`$A_{t}$`	-
A_x	`$A_{x}$`	-
$\bar{A}_x$	`$\bar{A}_{x}$`	-
$A_x^{(m)}$	`$A_{x}^{(m)}$`	-
$\bar{A}_x^{PR}$	`$\bar{A}_{x}^{PR}$`	-
$A^1_{x:\overline{n}\rceil}$	`$\lcterm{A}{x}{n}$` or	Yes
	`$\termins{x}{n}$`	Yes
$A_{x:\overline{n}\rceil}$	`$A_{x:\lcroof{n}}$` or	Yes
	`$\insend{x}{n}$`	Yes
$\bar{A}_{x:\overline{n}\rceil}$	`$\bar{A}_{x:\lcroof{n}}$` or	Yes
	`$\insendc{x}{n}$`	Yes
$A_{x:\overline{n}\rceil}^{\,1}$	`$\lcend{A}{x}{n}$` or	Yes
	`$\pureend{x}{n}$`	Yes
${}_jA_x$	`${}_{j}A_{x}$`	-
${}_*A_x$	`${}_{*}A_{x}$`	-
$\bar{A}^1_{x:\overline{n}\rceil}$	`$\lcterm{\bar{A}}{x}{n}$` or	Yes
	`$\terminsc{x}{n}$`	Yes
$\tilde{A}^1_{x:\overline{n}\rceil}$	`$\lcterm{\tilde{A}}{x}{n}$`	Yes
${}^2A_{x:\overline{n}\rceil}^{\,1}$	`${}^{2}\lcend{A}{x}{n}$`	Yes
${}^2A^1_{x:\overline{n}\rceil}$	`${}^{2}\lcterm{A}{x}{n}$`	Yes
${}_{m\rceil}\bar{A}_x$	`${}_{m\rceil}\bar{A}_{x}$`	-
${}_{m\rceil n}\bar{A}_x$	`${}_{m\rceil n}\bar{A}_{x}$`	-
A_{xy}	`$A_{xy}$`	-
$A_{\overline{xy}}$	`$A_{\overline{xy}}$`	-
$A_{xy}^{(m)}$	`$A_{xy}^{(m)}$`	-
$\bar{A}_{xy}^{\,2}$	`$\lcsecond{\bar{A}}{x}{y}$`	Yes
$\bar{A}^1_{xy}$	`$\lcfirst{\bar{A}}{x}{y}$`	Yes
$A_{xy:\overline{n}\rceil}$	`$A_{xy:\lcroof{n}}$`	Yes
$\bar{A}^{\,1}_{\overline{xy}:\overline{n}\rceil}$	`$\lcterm{\bar{A}}{\overline{xy}}{n}$`	Yes
${}^2A_{xy:\overline{n}\rceil}$	`${}^{2}A_{xy:\lcroof{n}}$`	Yes
$\bar{A}_{wxy}^{\,2}$	`$\lcsecond{\bar{A}}{wx}{y}$`	Yes

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$\bar{A}_{\overline{x_1x_2x_3}}$	`$\bar{A}_{\overline{x_{1}x_{2}x_{3}}}$`	-
${}_kAS$	`${}_{k}AS$`	-
${}_k\widehat{AS}$	`${}_{k}\widehat{AS}$`	-
$(AS)_{x+h}$	`$(AS)_{x+h}$`	-
(AAI)	`$(AAI)$`	-
$b(u)$	`$b(u)$`	-
b_j	`$b_{j}$`	-
b_t	`$b_{t}$`	-
$b_f(t)$	`$b_{f}(t)$`	-
B_t	`$B_{t}$`	-
$\hat{B}_{x+k}$	`$\hat{B}_{x+k}$`	-
$B^{(3)}_{x+t}$	`$B_{x+t}^{(3)}$`	-
$B^{(j)}_{x+t}$	`$B_{x+t}^{(j)}$`	-
${}_hBP$	`${}_{h}BP$`	-
c	`$c$`	-
c_k	`$c_{k}$`	-
$\hat{c}_k$	`$\hat{c}_{k}$`	-
$c(t)$	`$c(t)$`	-
C_1	`$C_{1}$`	-
C_2	`$C_{2}$`	-
C_3	`$C_{3}$`	-
C_h	`$C_{h}$`	-
${}_kCV$	`${}_{k}CV$`	-
$d^{(j)}_x$	`$d_{x}^{(j)}$`	-
${}_nd_x$	`${}_{n}d_{x}$`	-
${}_nd^{(j)}_x$	`${}_{n}d_{x}^{(j)}$`	-
${}_nd^{(\tau)}_x$	`${}_{n}d_{x}^{(\tau)}$`	-
${}_tD_j$	`${}_{t}D_{j}$`	-
${}_{k+1}D$	`${}_{k+1}D$`	-
$(DA)^1_{x:\overline{n}\rceil}$	`$\lcterm{(DA)}{x}{n}$`	Yes

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$(D\bar{A})^1_{x:\overline{n}\rceil}$	`$\lcterm{(D\bar{A})}{x}{n}$`	Yes
${}_n\mathscr{D}_x$	`${}_{n}\mathscr{D}_{x}$`	-
${}_n\mathscr{D}_x^{(j)}$	`${}_{n}\mathscr{D}_{x}^{(j)}$`	-
${}_n\mathscr{D}_x^{(\tau)}$	`${}_{n}\mathscr{D}_{x}^{(\tau)}$`	-
e	`$e$`	-
e_{h-1}	`$e_{h-1}$`	-
e_x	`$e_{x}$`	-
$\mathring{e}_x$	`$\mathring{e}_{x}$`	-
$\hat{e}_k$	`$\hat{e}_{k}$`	-
$\mathring{e}_{x:\overline{n}\rceil}$	`$\mathring{e}_{x:\lcroof{n}}$`	Yes
e_{xy}	`$e_{xy}$`	-
$e_{\overline{xy}}$	`$e_{\overline{xy}}$`	-
E	`$\mathrm{E}$`	-
E	`$E$`	-
E_0	`$E_{0}$`	-
${}_nE_x$	`${}_{n}E_{x}$` or	-
	`$\pureendc{x}{n}$`	Yes
$(ES)_{x+h+t}$	`$(ES)_{x+h+t}$`	-
$ELRA$	`$ELRA$`	-
f	`$f$`	-
$f(u;t)$	`$f(u;t)$`	-
$f_s(s)$	`$f_{s}(s)$`	-
$F_X(x)$	`$F_{X}(x)$`	-
F_t	`$F_{t}$`	-
$F^{(k)}$	`$F^{(k)}$`	-
$F_s(s)$	`$F_{s}(s)$`	-
${}_kF$	`${}_{k}F$`	-
G	`$G$`	-
$\hat{G}$	`$\hat{G}$`	-
$G(b)$	`$G(b)$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$G(x\colon \alpha,\beta)$	`$G(x\colon\alpha,\beta)$`	-
$h(x)$	`$h(x)$`	-
$H(r)$	`$H(r)$`	-
$H(x\colon \alpha,\beta,x_0)$	`$H(x\colon\alpha,\beta,x_{0})$`	-
${}_u(hp)^{(\tau)}_{x+t}$	`${}_{u}(hp)_{x+t}^{(\tau)}$`	-
$(h\mu)^{(j)}_{x+t}(u)$	`$(h\mu)_{x+t}^{(j)}(u)$`	-
i'_{k+1}	`$i_{k+1}^{'}$`	-
$\hat{i}_{k+1}$	`$\hat{\imath}_{k+1}$`	-
$i(s,s+t)$	`$i(s,s+t)$`	-
I_k	`$I_{k}$`	-
I_d	`$I_{d}$`	-
$I_d(x)$	`$I_{d}(x)$`	-
${}_ji_k$	`${}_{j}i_{k}$`	-
$(IA)_x$	`$(IA)_{x}$`	-
$(I\bar{A})_x$	`$(I\bar{A})_{x}$`	-
$(\bar{I}\bar{A})_x$	`$(\bar{I}\bar{A})_{x}$`	-
$(I^{(m)}\bar{A})_x$	`$(I^{(m)}\bar{A})_{x}$`	-
$(IA)^1_{x:\overline{n}\rceil}$	`$\lcterm{(IA)}{x}{n}$`	Yes
J	`$J$`	-
$j(s,s+t,s+u)$	`$j(s,s+t,s+u)$`	-
${}_t\bar{k}_x$	`${}_{t}\bar{k}_{x}$`	-
K	`$K$`	-
$K(x)$	`$K(x)$`	-
$K(xy)$	`$K(xy)$`	-
$K(\overline{xy})$	`$K(\overline{xy})$`	-
l_x	`$l_{x}$`	-
$l_{[x]+k}$	`$l_{[x]+k}$`	-
$l_x^{(\tau)}$	`$l_{x}^{(\tau)}$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$l(x,u)$	`$l(x,u)$`	-
$l_f(x,u)$	`$l_{f}(x,u)$`	-
L	`$L$`	-
L_1	`$L_{1}$`	-
L_x	`$L_{x}$`	-
$L(h)$	`$L(h)$`	-
${}_tL$	`${}_{t}L$`	-
${}_tL^{\underline{2}}$	`${}_{t}L^{\underline{2}}$`	-
${}_tL_e$	`${}_{t}L_{e}$`	-
${}_tL_e^{\underline{2}}$	`${}_{t}L_{e}^{\underline{2}}$`	-
$\mathscr{L}(x)$	`$\mathscr{L}(x)$`	-
$\mathscr{L}_x^{(\tau)}$	`$\mathscr{L}_{x}^{(\tau)}$`	-
$m(x)$	`$m(x)$`	-
m_x	`$m_{x}$`	-
$m_x^{(j)}$	`$m_{x}^{(j)}$`	-
$m_x^{(\tau)}$	`$m_{x}^{(\tau)}$`	-
$m_x^{'(j)}$	`$m_{x}^{'(j)}$`	-
$\mathrm{M}_x(t)$	`$\mathrm{M}_{x}(t)$`	-
$M(x)$	`$M(x)$`	-
$n(u)$	`$n(u)$`	-
N	`$N$`	-
$N(t)$	`$N(t)$`	-
$p(j)$	`$p(j)$`	-
$p(x)$	`$p(x)$`	-
p_k	`$p_{k}$`	-
$p_{[x]+r}$	`$p_{[x]+r}$`	-
$p^{*n}(x)$	`$p^{*n}(x)$`	-
${}_tp_x$	`${}_{t}p_{x}$`	-
${}_tp_x^{(\tau)}$	`${}_{t}p_{x}^{(\tau)}$`	-
${}_tp_x^{'(j)}$	`${}_{t}p_{x}^{'(j)}$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
${}_tp_{xy}$	`${}_{t}p_{xy}$`	-
${}_tp_{\overline{xy}}$	`${}_{t}p_{\overline{xy}}$`	-
${}_tp_{\overline{xy}+t}$	`${}_{t}p_{\overline{xy}+t}$`	-
${}_tp_{\overline{x_1x_2x_3}}^{\quad k}$	`${}_{t}\lcsecond[k]{p}{\overline{x_{1}x_{2}}}{\overline{x_{3}}}$`	Yes
$P(x)$	`$P(x)$`	-
$P(s,t)$	`$P(s,t)$`	-
P_t	`$P_{t}$`	-
${}^TP_t$	`${}^{T}P_{t}$`	-
P^a	`$P^{a}$`	-
P_x	`$P_{x}$`	-
${}_jP_x$	`${}_{j}P_{x}$`	-
${}_*P_x$	`${}_{*}P_{x}$`	-
$P^A_{x:\overline{n}\rfloor}$	`$\lctermadj{P}{x}{n}$`	Yes
$P_{x:\overline{n}\rfloor}$	`$P_{x:\lcroof{n}}$`	Yes
$P_{\overline{xy}}$	`$P_{\overline{xy}}$`	-
$P^1_{x:\overline{n}\rfloor}$	`$\lcterm{P}{x}{n}$`	Yes
$P_{x:\overline{n}\rfloor}^{\quad 1}$	`$\lcend{P}{x}{n}$`	Yes
$\tilde{P}^1_{x:\overline{n}\rfloor}$	`$\lcterm{\tilde{P}}{x}{n}$`	Yes
$P^{*n}(x)$	`$P^{*n}(x)$`	-
${}_hP_x$	`${}_{h}P_{x}$`	-
${}_hP^1_{x:\overline{n}\rfloor}$	`${}_{h}\lcterm{P}{x}{n}$`	Yes
$(Pa)(x)$	`$(Pa)(x)$`	-
$(Pa)_t$	`$(Pa)_{t}$`	-
$P(\bar{A}^1_{x:\overline{n}\rfloor})$	`$P(\lcterm{\bar{A}}{x}{n})$`	Yes
$P({}_{n\vert}\ddot{a}_x)$	`$P({}_{n|}\ddot{a}_{x})$`	-
$\bar{P}({}_{n\vert}\bar{a}_x)$	`$\bar{P}({}_{n|}\bar{a}_{x})$`	-
$\bar{P}(\bar{A}_x)$	`$\bar{P}(\bar{A}_{x})$`	-
$P^{(m)}(\bar{A}_x)$	`$P^{(m)}(\bar{A}_{x})$`	-
$P^{\{m\}}(\bar{A}_x)$	`$P^{\{m\}}(\bar{A}_{x})$`	-
$P(\bar{A}^{PR}_x)$	`$P(\bar{A}_{x}^{PR})$`	-
$\bar{P}(\bar{A}_{x:\overline{n}\rfloor})$	`$\bar{P}(\bar{A}_{x:\lcroof{n}})$`	Yes
$\bar{P}(\bar{A}^1_{x:\overline{n}\rfloor})$	`$\bar{P}(\lcterm{\bar{A}}{x}{n})$`	Yes
$\bar{P}(\bar{A}_{x:\overline{n}\rfloor}^{\quad 1})$	`$\bar{P}(\lcend{\bar{A}}{x}{n})$`	Yes

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$P^{(m)}(\bar{A}_{x:\overline{n}\rceil})$	`$\bar{P}(\bar{A}_{x:\lcroof{n}})$`	Yes
$P^{(m)}(\bar{A}^{1}_{x:\overline{n}\rceil})$	`$\bar{P}(\lcterm{\bar{A}}{x}{n})$`	Yes
${}_h\bar{P}(\bar{A}_x)$	`${}_{h}\bar{P}(\bar{A}_{x})$`	-
${}_h\bar{P}(\bar{A}_{x:\overline{\frac{1}{n}}\rceil})$	`${}_{h}\bar{P}(\lcend{\bar{A}}{x}{n})$`	Yes
${}_hP^{(m)}(\bar{A}_x)$	`${}_{h}P^{(m)}(\bar{A}_{x})$`	-
${}_hP^{(m)}(\bar{A}_{x:\overline{n}\rceil})$	`${}_{h}P^{(m)}(\bar{A}_{x:\lcroof{n}})$`	Yes
${}_hP^{\{m\}}(\bar{A}_{x:\overline{n}\rceil})$	`${}_{h}P^{\{m\}}(\bar{A}_{x:\lcroof{n}})$`	Yes
$P(\bar{A}^{2}_{\overline{xyz}})$	`$P(\lcsecond{\bar{A}}{\overline{xy}}{\overline{z}})$`	Yes
$P(\bar{A}^{2}_{x\overline{yz}})$	`$P(\lccomptwo{\bar{A}}{x}{y}{z})$`	Yes
$\tilde{P}^{1}_{x:\overline{n}\rceil}$	`$\lcterm{\tilde{P}}{x}{n}$`	Yes
$q_{[x]+r}$	`$q_{[x]+r}$`	-
$q_x^{(d)}$	`$q_{x}^{(d)}$`	-
$q_x^{(i)}$	`$q_{x}^{(i)}$`	-
$q_x^{(r)}$	`$q_{x}^{(r)}$`	-
$q_x^{(w)}$	`$q_{x}^{(w)}$`	-
$\hat{q}^{(j)}_{x+k}$	`$\hat{q}_{x+k}^{(j)}$`	-
q_{xy}	`$q_{xy}$`	-
${}_{k\rceil}q_x$	`${}_{k\rceil}q_{x}$`	-
${}_tq_x$	`${}_{t}q_{x}$`	-
${}_tq_x^{(j)}$	`${}_{t}q_{x}^{(j)}$`	-
${}_tq_x^{(\tau)}$	`${}_{t}q_{x}^{(\tau)}$`	-
${}_tq_x^{'(j)}$	`${}_{t}q_{x}^{'(j)}$`	-
${}_{t\rceil u}q_x$	`${}_{t\rceil u}q_{x}$`	-
${}_nq^{1}_{xy}$	`${}_{n}\lcfirst{q}{x}{y}$`	Yes
${}_nq^{2}_{xy}$	`${}_{n}\lcsecond{q}{x}{y}$`	Yes
${}_{k\rceil}q_{xy}$	`${}_{k\rceil}q_{xy}$`	-
${}_nq^{2}_{x\overline{yz}}$	`${}_{n}\lccomptwo{q}{x}{y}{z}$`	Yes
${}_\infty q^{3}_{wx\overline{yz}}$	`${}_{\infty}\lccompthree{q}{w}{x}{y}{z}$`	Yes
r	`$r$`	-
r_C	`$r_{C}$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
r_F	`$r_{F}$`	-
r_N	`$r_{N}$`	-
$(rA)_t$	`$(rA)_{t}$`	-
$(rF)_t$	`$(rF)_{t}$`	-
$(rV)_t$	`$(rV)_{t}$`	-
R	`$R$`	-
$\tilde{R}$	`$\tilde{R}$`	-
$R(x,h,t)$	`$R(x,h,t)$`	-
$s(x)$	`$s(x)$`	-
$\ddot{s}_{\overline{n}\rceil}$	`$\ddot{s}_{\lcroof{n}}$`	Yes
$s(x,u)$	`$s(x,u)$`	-
$\bar{s}_{x:\overline{n}\rceil}$	`$\bar{s}_{x:\lcroof{n}}$`	Yes
$\ddot{s}_{x:\overline{n}\rceil}$	`$\ddot{s}_{x:\lcroof{n}}$`	Yes
S	`$S$`	-
$S(t)$	`$S(t)$`	-
S_n	`$S_{n}$`	-
S_y	`$S_{y}$`	-
${}_kSC$	`${}_{k}SC$`	-
T	`$T$`	-
$\tilde{T}$	`$\tilde{T}$`	-
$T(x)$	`$T(x)$`	-
T_x	`$T_{x}$`	-
Txy	`$T{xy}$`	-
$T_{\overline{xy}}$	`$T_{\overline{xy}}$`	-
$u(w)$	`$u(w)$`	-
$U(h)$	`$U(h)$`	-
$U(t)$	`$U(t)$`	-
U_t	`$U_{t}$`	-
U_n	`$U_{n}$`	-
$\hat{U}_n$	`$\hat{U}_{n}$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
v_t	`$v_{t}$`	-
$\tilde{v}_n$	`$\tilde{v}_{n}$`	-
V_i	`$V_{i}$`	-
V_t	`$V_{t}$`	-
${}_kV_x$	`${}_{k}V_{x}$`	-
${}_kV_{x:\overline{n}\rceil}$	`${}_{k}V_{x:\lcroof{n}}$`	Yes
${}_kV^1_{x:\overline{n}\rceil}$	`${}_{k}\lcterm{V}{x}{n}$`	Yes
${}_kV_{x:\overline{n}\rceil}^{\frac{1}{}}$	`${}_{k}\lcend{V}{x}{n}$`	Yes
${}_kV_x^{FPT}$	`${}_{k}V_{x}^{FPT}$`	-
		Yes
${}^h_kV_x$	`${}_{k}^{h}V_{x}$`	-
${}^h_kV^1_{x:\overline{n}\rceil}$	`${}_{k}^{h}\lcterm{V}{x}{n}$`	Yes
${}^h_kV^{(m)}_{x:\overline{n}\rceil}$	`${}_{k}^{h}V_{x:\lcroof{n}}^{(m)}$`	Yes
${}^h_kV^{Mod}_{x:\overline{n}\rceil}$	`${}_{k}^{h}V_{x:\lcroof{n}}^{Mod}$`	Yes
${}_kV(_{n\rceil}\ddot{a}_x)$	`${}_{k}V({}_{n\rceil}\ddot{a}_{x})$`	-
${}_k\bar{V}(_{n\rceil}\bar{a}_x)$	`${}_{k}\bar{V}({}_{n\rceil}\bar{a}_{x})$`	-
${}_t\bar{V}(\bar{A}_x)$	`${}_{t}\bar{V}(\bar{A}_{x})$`	-
${}_t\bar{V}(\bar{A}_{x:\overline{n}\rceil})$	`${}_{t}\bar{V}(\bar{A}_{x:\lcroof{n}})$`	Yes
${}_t\bar{V}(\bar{A}^1_{x:\overline{n}\rceil})$	`${}_{t}\bar{V}(\lcterm{\bar{A}}{x}{n})$`	Yes
${}_t\bar{V}(\bar{A}_{x:\overline{n}\rceil}^{\frac{1}{}})$	`${}_{t}\bar{V}(\lcend{\bar{A}}{x}{n})$`	Yes
${}_t\bar{V}(\bar{A}_x)^{Mod}$	`${}_{t}\bar{V}(\bar{A}_{x})^{Mod}$`	-
${}_tV(\bar{A}_{\overline{xy}})$	`${}_{t}V(\bar{A}_{\overline{xy}})$`	-
${}_tV^{\{1\}}(\bar{A}_{\overline{xy}})$	`${}_{t}V^{\{1\}}(\bar{A}_{\overline{xy}})$`	-
${}_kV(\bar{A}^{PR}_x)$	`${}_{k}V(\bar{A}_{x}^{PR})$`	-
${}^h_kV(\bar{A}^1_{x:\overline{n}\rceil})$	`${}_{k}^{h}V(\lcterm{\bar{A}}{x}{n})$`	Yes
${}^h_t\bar{V}(\bar{A}x)$	`${}_{t}^{h}\bar{V}(\bar{A}{x})$`	-
${}^h_t\bar{V}(\bar{A}_{x:\overline{n}\rceil})$	`${}_{t}^{h}\bar{V}(\bar{A}_{x:\lcroof{n}})$`	Yes
${}^h_kV^{\{m\}}(\bar{A}_{x:\overline{n}\rceil})$	`${}_{k}^{h}V^{\{m\}}(\bar{A}_{x:\lcroof{n}})$`	Yes
$w(x)$	`$w(x)$`	-
W_i	`$W_{i}$`	-
W_t	`$W_{t}$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
${}_kW$	`${}_{k}W$`	-
${}_kW_x$	`${}_{k}W_{x}$`	-
${}_kW_{x:\overline{n}\rceil}$	`${}_{k}W_{x:\lcroof{n}}$`	Yes
${}^h_kW_x$	`${}_{k}^{h}W_{x}$`	-
$(Wa)_t$	`$(Wa)_{t}$`	-
${}_k\bar{W}(\bar{A}_x)$	`${}_{k}\bar{W}(\bar{A}_{x})$`	-
${}_k\bar{W}(\bar{A}_{x:\overline{n}\rceil})$	`${}_{k}\bar{W}(\bar{A}_{x:\lcroof{n}})$`	Yes
${}^h_k\bar{W}(\bar{A}_x)$	`${}_{k}^{h}\bar{W}(\bar{A}_{x})$`	-
(x)	`$(x)$`	-
$(x_1x_2\dots x_m)$	`$(x_{1}x_{2}\dots x_{m})$`	-
$(\overline{x_1x_2\dots x_m})$	`$(\overline{x_{1}x_{2}\dots x_{m}})$`	-
$\frac{k}{x_1x_2\dots x_m}$	`$\surstat{k}{x}{m}$`	Yes
$\frac{[k]}{x_1x_2\dots x_m}$	`$\defsurstat{k}{x}{m}$`	Yes
X_i	`$X_{i}$`	-
$X(\theta)$	`$X(\theta)$`	-
Y	`$Y$`	-
$y(s,s+m)$	`$y(s,s+m)$`	-
$Y(t,n)$	`$Y(t,n)$`	-
z_t	`$z_{t}$`	-
Z	`$Z$`	-
${}_mZ_y$	`${}_{m}Z_{y}$`	-
α	`$\alpha$`	-
$\alpha(m)$	`$\alpha(m)$`	-
$\bar{\alpha}$	`$\bar{\alpha}$`	-
α^{CRVM}	`$\alpha^{CRVM}$`	-
β	`$\beta$`	-
$\beta(m)$	`$\beta(m)$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$\bar{\beta}$	`$\bar{\beta}$`	-
β^{CRVM}	`$\beta^{CRVM}$`	-
$\beta(x,u)$	`$\beta(x,u)$`	-
$\Gamma(\alpha)$	`$\Gamma(\alpha)$`	-
δ	`$\delta$`	-
δ_t	`$\delta_{t}$`	-
θ	`$\theta$`	-
$\lambda(t)$	`$\lambda(t)$`	-
$\lambda(t,n)$	`$\lambda(t,n)$`	-
Λ	`$\Lambda$`	-
Λ_h	`$\Lambda_{h}$`	-
$\mu(x)$	`$\mu(x)$`	-
$\mu_x(t)$	`$\mu_{x}(t)$`	-
$\mu_x^{(d)}$	`$\mu_{x}^{(d)}$`	-
$\mu_x^{(i)}$	`$\mu_{x}^{(i)}$`	-
$\mu_x^{(w)}$	`$\mu_{x}^{(w)}$`	-
$\mu_x^{(j)}(t)$	`$\mu_{x}^{(j)}(t)$`	-
$\mu_{xy}(t)$	`$\mu_{xy}(t)$`	-
$\mu_{\overline{xy}}(t)$	`$\mu_{\overline{xy}}(t)$`	-
$\mu(x,u)$	`$\mu(x,u)$`	-
π_h	`$\pi_{h}$`	-
π_t	`$\pi_{t}$`	-
ρ	`$\rho$`	-
τ	`$\tau$`	-

Table 1: Life Contingencies' Symbols (continued)

Symbol	LaTeX 2_ε Code	Need `lifecon`?
$\phi(x)$	`$\phi(x)$`	-
$\phi(x,u)$	`$\phi(x,u)$`	-
$\psi(u)$	`$\psi(u)$`	-
$\tilde{\psi}(u)$	`$\tilde{\psi}(u)$`	-
$\psi(u,t)$	`$\psi(u,t)$`	-
$\psi(u;w)$	`$\psi(u;w)$`	-
$\tilde{\psi}(u,w)$	`$\tilde{\psi}(u,w)$`	-
ω	`$\omega$`	-