

**Lifetables**

- Types  
"Cohort/generation" vs. "Current/Period"
- Elements (x = age/birthday)  
 $l_x$   $q_x$  &  $p_x$   $d_x$   $L_x$   $T_x$   $e_x$   
and precision re:-  
**conditional** nature of  $q_x$  &  $p_x$  and of  $e_x$   
**unconditional** nature of  $d_x$
- How calculated (current lifetable)  
from mortality rates to  $q_x$ 's
- {if curve reaches 0} Mean =  $e_0$  = area under survival curve  
(i.e. curve of  $l_x$  vs x) = total p-y lived ÷ number who begin
- $l_x$  (or  $S[x]$ ) as both  
- Prob(longevity > x) and as  
- P(alive at age x) [i.e., prevalence]
- "cumulative survival" (???) and cumulative mortality
- hazard function,  $h[x]$
- link between  $l_x$  (or  $S[x]$ ) and integral of hazard function

$S[x] = \exp[- \int_0^x h[u] du ]$ , with integral from u=0 to u=x  
[cf notes on Incidence, cumulative incidence, survival function]

**Lexis Diagram**

**(mis)Applications**

- Longevity of jazz musicians / Titanic survivors

**Readings (\* = most relevant)**

[<http://www.epi.mcgill.ca/hanley/c681/lifetables>]

- \* Lifetables [ and Survival after Treatment..]  
pp 199-205 of Ch 18 of Bradford Hill
- \* Survival Analysis  
Sections 1 and 2 [Intro and Lifetables]  
Ch 17 of Armitage et al 4th ed.
- Text and Technical Notes of United States Life Tables 2000  
[National Vital Statistics Reports, Vol.51, No.3, December 19, 2002]
- [more advanced and more detailed] Chapter 9 (Lifetables, an Introduction) of Selvin's textbook Statistical Analysis of Epidemiologic Data (Oxford 1991)

**Other Resources**

[ <http://www.epi.mcgill.ca/hanley/c681/lifetables> ]

Proportions of newborn males who would survive to/past their  $x^{th}$  birthday (x = 0, 10, 20, 30, ... 100) if they experienced age-specific death rates observed in Québec for the year 1990,

