Human Demography

Population structure

- Size
  - Births
  - Deaths
  - Rate
- Age structure
  - Cohorts
  - Age classes

“Population...increases in a geometric ratio. Subsistence increases...in an arithmetic ratio”

Population size, $N$

$N = b - d$

Births:
- Limited only by constraints
- “Over-reproduction”
Deaths:
- Major control of population size
- Density dependent
- Density independent

Age structure

Life history tables

- Age class ($x$)
- Number of individuals in an age class ($n_x$)
- Probability of surviving to $x$ ($l_x$)
- Number dying in an interval ($d_x$)
- Probability of dying ($q_x$)
Other life history components

- Number of individuals alive at interval midpoint ($L_x$)
- Total number of years still to be lived ($T_x$)
- Life expectancy at age $x$ ($e_x$)

<table>
<thead>
<tr>
<th>$x$</th>
<th>Age structure</th>
<th>$n_x$</th>
<th>$l_x$</th>
<th>$d_x$</th>
<th>$q_x$</th>
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</table>

Survivorship curves

Mortality curves