Cemetery Demography Project
Instructor: Christina Brooks

Objective: This project will consist of: 1) Creating Data Sheets 2) Researching the history of each site 3)Tabulating life history data (life tables) 4) Comparing the mortality data in these two assemblages 5) drawing conclusions about potential similarities or differences and 6) develop a conservation/preservation plan

Data Collection: Data collection will entail working from historic cemetery records or visiting the cemetery and recording important vital information. The following information will be collected: 1) Date of Birth for each individual; 2) Date of death for each individual, 3) The sex of each individual 4) Age at Death (as accurate as possible, this information is sometimes provided, if so use this age in calculations) Number of records where age could not be recorded, 5) If the individual was married, single, widowed, divorced 6) Any notes you deem important

Each individual should collect data from 50 individuals from each cemetery (100 total) and input the data (into two different worksheets) for each cemetery from the list provided, into an Excel worksheet following this example:

<table>
<thead>
<tr>
<th>Last Name</th>
<th>(Maiden)</th>
<th>Sex</th>
<th>DOB</th>
<th>DOD</th>
<th>Age</th>
<th>M,S,W,D</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adams</td>
<td></td>
<td>F</td>
<td>8/29/1930</td>
<td>42</td>
<td>M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: If you are working in groups, each individual still collects the same amount of data (i.e. 2 individuals in a group collect 200 total, 3 individuals in a group collect 300 total, etc)These worksheets containing your raw data will be turned in via email.

Collation: Once your raw data is input into worksheets, groups will input data on the data collection form. For the tabulated data on the data collection form, sum the 'Age at Death ' column (down the column) and fill this in the space marked 'Total'. This is your age cohort (Dx) comprised of raw counts. Place these totals within the appropriate age cohort in the Dx column on the Life Table Calculation form. Data should be organized into age groups and all values derived as illustrated and explained on the calculation example sheet (over).

Analysis and Write-Up: Conduct background research on both cemeteries and include a brief history of both in your write up. Complete 2 life tables; one for each cemetery. You will be asked to interpret both data sets. Written reports (does not include graphs and other figures) should be 5-6 double spaced typed pages.

Full credit will consist of:

1. Submission of data worksheets in excel (via email)
2. Submission of background history of each site
3. Submission of the life table work sheets (containing Dx, dx, lx and Qx values) for each of the samples, plus the data collection form for the historic cemetery sample.
4. Submission of graphic plots of the dx values for each mortuary sample as well as graphic plots of cemetery comparisons (i.e. male/female, African American/ European American, etc). (Note that Dx refers to raw count and dx refers to percentages of individuals. The dx values are to be graphed.) Graphs need not be computer generated, however they must be labeled and interpretable (if not using a computer, graph paper should be used). Plot dx values for each sample on the same graph (1 graph); do the same for Qx (1 graph).
5. Valid, well developed interpretations and analysis of the life table results as they relate to the background history of each site (Looking at the document history that you gathered on each cemetery, is there anything that occurred in your groups history that might help explain phenomenon in your data
(i.e. high proportion of males dying during wartime, high number of children dying during period of great depression, etc). From this information, how do you think culture and human biology interact to determine human mortality? Which is the more powerful force (in your opinion)?

6. Valid, well developed conservation and/or preservation plan

Extra Credit (10pts possible): You as an individual can receive extra credit by visiting the actual cemeteries and taking pictures (5pts) (to be turned in) or doing a one page write up on the similarities and differences of the cemetery landscapes (5pts). Extra credit will be due early in the semester, as it is important to visit your sites before you get too far into your project.

**CALCULATIONS**

Sample Data:

<table>
<thead>
<tr>
<th>X</th>
<th>Dx</th>
<th>dx</th>
<th>lx</th>
<th>Qx</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1.9</td>
<td>13</td>
<td>0.027</td>
<td>1.000</td>
<td>0.027</td>
</tr>
<tr>
<td>2-9.9</td>
<td>10</td>
<td>0.021</td>
<td>0.973</td>
<td>0.022</td>
</tr>
<tr>
<td>10-19.9</td>
<td>9</td>
<td>0.019</td>
<td>0.952</td>
<td>0.020</td>
</tr>
<tr>
<td>20-29.9</td>
<td>26</td>
<td>0.054</td>
<td>0.933</td>
<td>0.058</td>
</tr>
<tr>
<td>30-39.9</td>
<td>13</td>
<td>0.027</td>
<td>0.879</td>
<td>0.031</td>
</tr>
<tr>
<td>40-49.9</td>
<td>37</td>
<td>0.077</td>
<td>0.851</td>
<td>0.091</td>
</tr>
<tr>
<td>50-59.9</td>
<td>48</td>
<td>0.100</td>
<td>0.774</td>
<td>0.130</td>
</tr>
<tr>
<td>60-69.9</td>
<td>100</td>
<td>0.209</td>
<td>0.674</td>
<td>0.311</td>
</tr>
<tr>
<td>70+</td>
<td>222</td>
<td>0.464</td>
<td>0.464</td>
<td>1.000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>478</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculations:

1. X (Cohort): These are given; organize your data according to these age categories.

2. Dx (Raw Counts): Count the number of people who died during each age interval.
   - Calculating Age: Death Year - Birth Year
     1914 - 1863 = 51 years -- Place in 50-59.9 category

3. dx (Percent of Population in a Cohort): Percent of the population who died during an age interval (death cohort). By converting to percentages, we can compare populations of different sizes.
   
   \[
   \text{DX} \div \text{Total number of individuals in sample} = \text{dx}
   \]

   For example, from the life table above for X = 0-1.9:
   
   \[
   13 \div 478 = 0.027 \quad \text{or} \quad 2.7\% \text{ of population (Remember } 1.00 = 100\%)
   \]

   Check proofing: The sum total of dx (down the column) should equal about 1.00 [100\%] (Expect some rounding error).

4. lx (Survivorship to Next Cohort): The percent of the population who survives to enter the next age interval.
   - Based on entry into cohort. All members enter the first cohort, therefore lx(0-1.9) = 1.00 (ALWAYS!).

   From the above life table:
   
   \[
   \text{lx}(2-9.9) = \text{lx}(0-1.9) \text{ - dx}(0-1.9)
   \]

   \[
   0.973 = 1.00 - 0.027
   \]

   \[
   \text{lx}(10-19.9) = \text{lx} (2-9.9) \text{ - dx} (2-9.9)
   \]

   \[
   0.952 = 0.973 - 0.021
   \]

   Check Proofing: Final lx value should be the same/very close to final dx value. Also lx values always decrease, they can never increase.
5. Qx (Probability of Death within Cohort): Represents the probability of death for any individual during a cohort. Can be used to identify dangerous age intervals for members of a population (e.g. if Qx (0-9.9) = .45 \((45\%)\), then this is a very dangerous time. There is a 45% probability of mortality for this age interval)

\[
x \div l_x = Q_x
\]

From the life table above:

- Qx (2-9.9) = 0.021 \div 0.973 = 0.022
- Qx (10-19.9) = 0.019 \div 0.952 = 0.020

As a rule, no one survives the final age cohort, therefore probability of death among this group (100+) is 1.00 \((100\%)\).