Lab 2 Population Distribution and Survivorship

Purpose: To compare survivorship patterns of people from the (approx.) 19th and 20th Centuries using survivorship curves of males and females generated from cemetery data.

Introduction: Most individuals do not reach the maximum life span of their species. The ratio of age at death to the surviving portion of a population is a function of the species (and for humans –their cultural and socio-economic conditions). A survivorship curve shows the probability that an individual of a particular species, age and gender will survive to a certain age.

Analysis

1. Using the data collected at a cemetery in Atlanta, GA, calculate the age at death for each individual listed.

2. Tally the number of individuals who died in each of the 5-yr age groups between 0 yrs – 100 yrs.

3. Copy the data table below into your lab book *twice*. **Table 1**: born before 1880; **Table 2**: born during or after 1880.

4. Calculate the total number of individuals in your sample.

5. Calculate the number of surviving individuals in each 5-yr age group by subtracting the number of individuals that died in each age group from the previous age group's number of survivors.

6. Convert the number surviving into *Percent Surviving.*

Sample Data Table

Age at death (yrs)	Male			Female		
	# that died	# survivors	% Survivors	# that died	# survivors	% Survivors
-----	0					
0-0.99						
1-4.99						
5-9.99						
10-14.99						
95-99.99						
100+						
Total						

7. Plot all four of your *Percent Surviving* data sets on one graph "% Surviving" *vs* "Age" in your lab book.   Use different symbols/colors for each data set.

8. Draw survival curves for males and females for each category (pre-post 1880).

Survivorship Curves
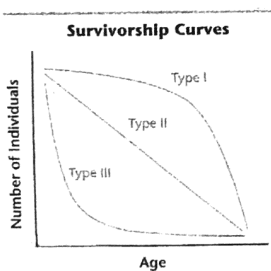
Questions

1. Compare the survivorship curves for males and females. Explain what you think accounts for the differences in the curves.

2. Compare the survivorship curves for those individuals who were born before/after 1880. Explain what you think accounts for the differences in the curves.

3. What do you think the curves will look like in the next 100 years?

4. Identify which survivorship curve is shown on your graph: **Type I** "late loss" high survival rate of the young, live out most of their expected life span and die in old age: **Type II** "constant loss" shows relatively constant death rate due to hunting or diseases, or **Type III** "early loss" have many young, most of which die very early in their life.

5. Match these examples to each of the three survivorship curves:
   - Cane toads
   - Fish
   - sheep, phlox Coral
   - Birds, Squirrels
   - Internal parasites
   - Industrialized countries not at war
   - Marine invertebrates

6. What is an **r-strategist** and a **K-strategist**? How are the life cycles of these strategists different?

Graveyard Data
Oakland Cemetery, Atlanta, GA

#	year of birth	year of death	sex	#	year of birth	year of death	sex
1	1877	1961	M	51	1893	1984	M
2	1886	1961	M	52	1880	1881	M
3	1892	1983	F	53	1882	1975	M
4	1888	1980	M	54	1884	1970	F
5	1894	1973	F	55	1778	1848	M
6	1879	1956	M	56	1784	1870	F
7	1881	1968	F	57	1809	1826	F
8	1878	1955	M	58	1859	1934	M
9	1899	1976	F	59	1864	1950	F
10	1886	1951	F	60	1862	1921	M
11	1893	1951	M	61	1884	1955	F
12	1898	1976	F	62	1830	1908	M
13	1894	1966	M	63	1835	1903	F
14	1924	1944	M	64	1859	1918	M
15	1936	1957	F	65	1857	1943	F
16	1918	1975	M	66	1891	1943	M
17	1912	1976	M	67	1888	1944	F
18	1871	1947	M	68	1861	1905	F
19	1885	1970	F	69	1858	1940	M
20	1883	1976	F	70	1877	1971	F
21	1873	1952	M	71	1829	1920	M
22	1879	1947	M	72	1837	1926	F
23	1895	1958	F	73	1870	1889	F
24	1891	1969	M	74	1886	1972	M
25	1885	1956	F	75	1882	1948	F
26	1882	1968	M	76	1862	1935	M
27	1879	1972	F	77	1861	1930	F
28	1908	1969	M	78	1861	1902	M
29	1827	1907	M	79	1906	1971	F
30	1833	1871	F	80	1909	1983	F
31	1840	1923	F	81	1845	1904	M
32	1878	1948	F	82	1878	1927	M
33	1874	1954	F	83	1876	1939	F
34	1896	1955	M	84	1837	1914	M
35	1874	1943	F	85	1835	1913	F
36	1868	1906	M	86	1859	1937	M
37	1877	1961	M	87	1870	1938	F
38	1884	1968	F	88	1903	1946	M
39	1878	1934	M	89	1906	1946	F
40	1840	1924	F	90	1847	1926	M
41	1835	1900	M	91	1846	1925	F
42	1868	1880	F	92	1878	1961	M
42	1821	1905	M	93	1881	1965	F
44	1826	1913	F	94	1852	1925	M
45	1851	1946	M	95	1853	1915	F
46	1867	1952	F	96	1862	1963	F
47	1888	1982	F	97	1896	1976	F
48	1886	1967	F	98	1854	1934	F
49	1897	1965	M	99	1863	1947	F
50	1916	1961	F	100	1906	1947	M