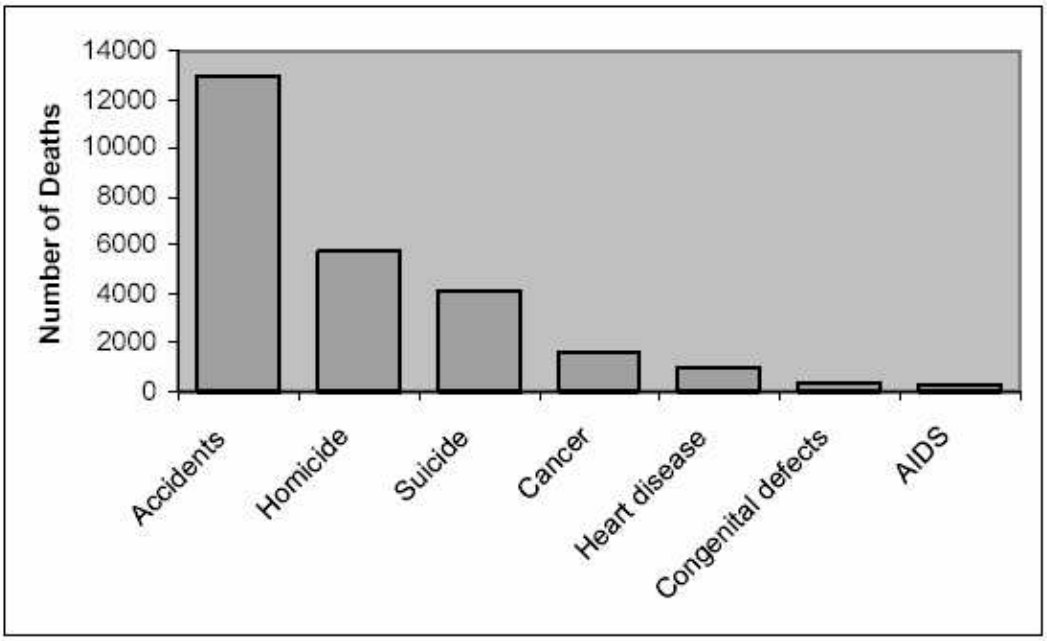
HW 1

1.14, 1.18, 1.28 (use ta01_007.xls), 1.40 (ca01_001.xls), 1.48 (ta01_007.xls), 1.74, 1.76, 1.80

1.14 a)

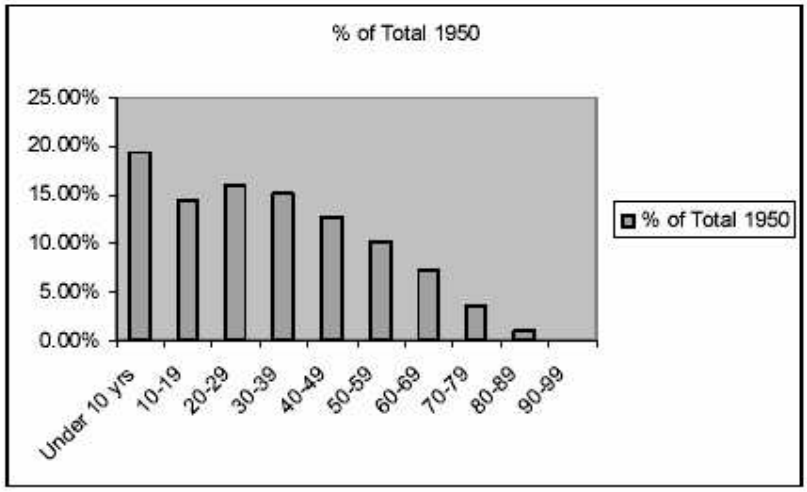


b) To make a pie chart we need to know the total number of deaths in this age group in 1997.

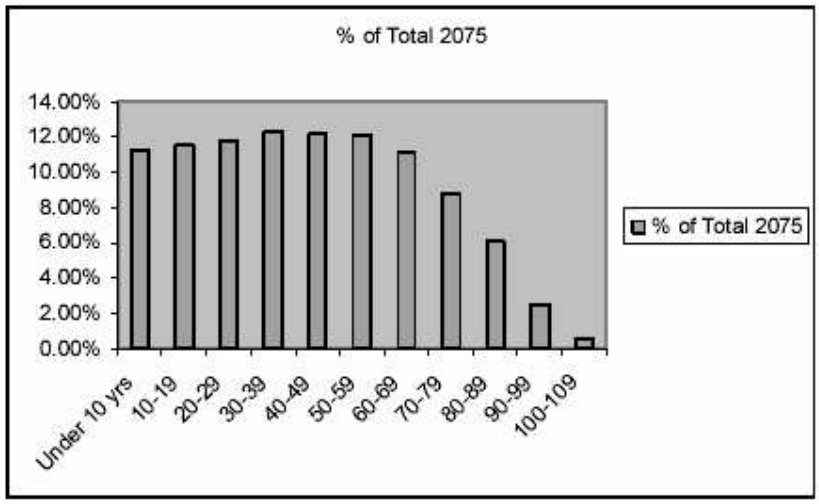
1.18 a)

Age group	1950	2075	% of total 1950	% of total 2075
Under 10 yrs	29.3	34.9	19.42%	11.29%
10-19	21.8	35.7	14.45%	11.55%
20-29	24	36.8	15.90%	11.91%
30-39	22.8	38.1	15.11%	12.33%
40-49	19.3	37.8	12.79%	12.23%
50-59	15.5	37.5	10.27%	12.14%
60-69	11	34.5	7.29%	11.17%
70-79	5.5	27.2	3.64%	8.80%
80-89	1.6	18.8	1.06%	6.08%
90-99	0.1	7.7	0.07%	2.49%
100-109		1.7		0.55%

b) The highest percentage age group is the under 10 age group with almost 20%.

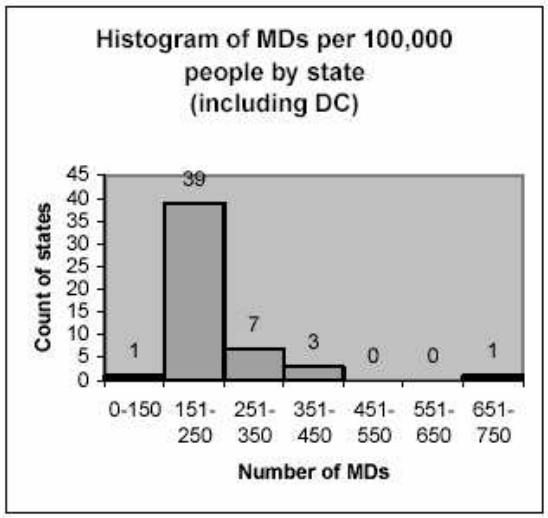


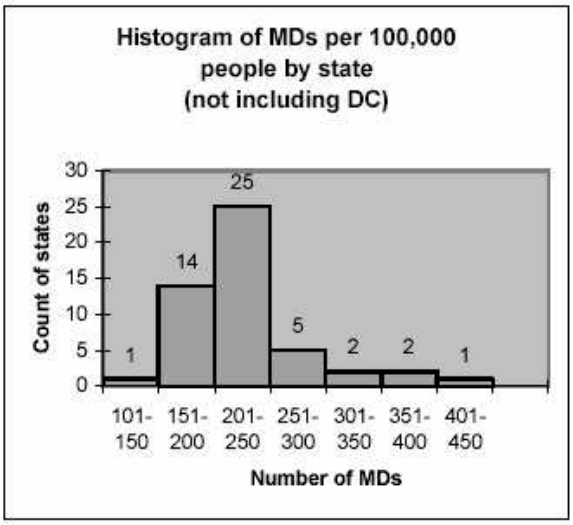
c) The most obvious changes between 1950 and 2075 is the more uniform distribution observed in 2075. There are also observations in a new category, the 100-109 age group.



1.28 a) Two states with the same number of doctors may not offer the same level of health care if their populations are very different.

b) This histogram does not give a clear look at the distribution because of the outlier. The outlier is for Washington, DC and can be taken out of the data set since DC is not technically a state. The resulting histogram, without the outlier, shows a skewed distribution. States average close to 200 doctors per 100,000 people with the range being from 100-450.





1.40 The distribution appears skewed to the right; therefore, a five-number summary would be a better numerical description of the distribution. The five-number summary for this distribution is: 1.5, 2.7, 3.4, 4, 8.9. ($\overline{x} = 3.58, s = 1.24$)

1.48 Northern states $\bar{x} = 361.89,\ s = 216.45$

0	
1	13 20 21
2	
3	34 91
4	3 42
5	
6	44 89
7	
8	
9	
10	

Southern states $\bar{x} = 621.5,\ s = 259.07$

0	
1	
2	19
3	17 45
4	69
5	65
6	7 7 78
7	90
8	47
9	90
10	24

Midwestern states $\bar{x} = 419,\ s = 204.35$

0	87
1	97
2	71
3	10 38
4	9 35 38
5	15 77 90
6	
7	
8	61
9	
10	

Based on the stem plots and numerical summaries one can see that the Southern states have a higher incidence of violent crime than the Northeastern or Midwestern states. When comparing small data sets both pictures and numerical summaries help us see the differences. Note the higher mean and standard deviation for the Southern states.

1.74 a) Between 234 and 298 days. **b)** 234 days or less. **c)** It is unlikely. 218 is three standard deviations below the mean, which tells us only 0.15% of all women give birth in 218 days or less.

1.76 a) $z = 0.84$. **b)** $z = 0.39$.

1.80 a) 5.16%. **b)** 54.71%. **c)** 279.44 days.