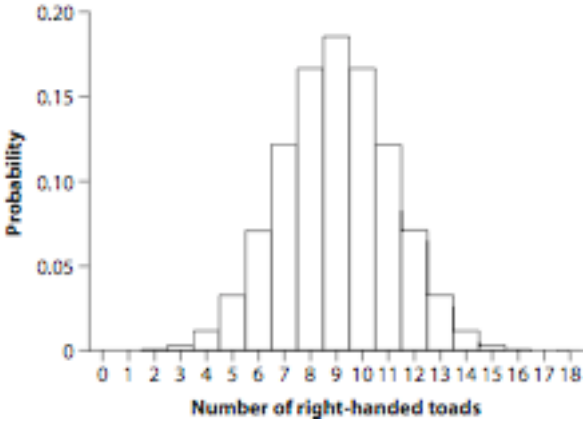
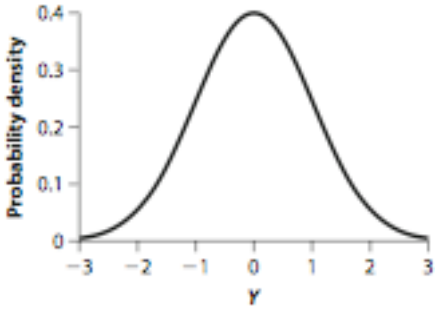
Probability Distributions

(see pp. 120 – 123 of text)

Discrete probability distributions:
With discrete variables, the *height of the bar* gives the probability of a particular outcome. In the example below (Fig. 6.2-1 from the text), $Pr(Y = 8) = 0.1669$. Note that the area in the entire histogram sums to 1 [area of each bar = (height of bar) x (width of bar) = (height of bar) x (1)]. For a discrete probability distribution, there is a difference, for example, between $Pr(Y > 8)$ and $Pr(Y \geq 8)$.

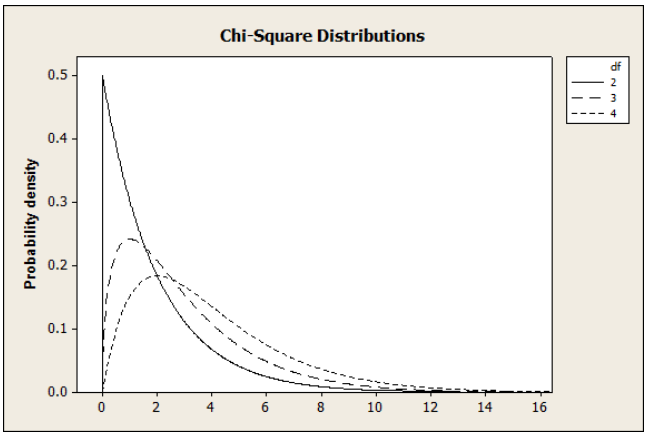


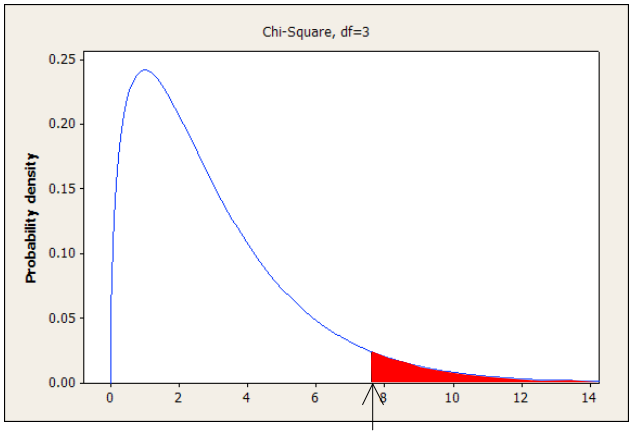
Continuous probability distributions:
With continuous variables, we define probability as the *area under the curve* for a particular range of values. The area under the curve for the entire distribution equals 1. Since there are an infinite number of possible values for a continuous variable, the probability of any single value equals 0; thus, $Pr(Y = 1) = 0$. Thus, there is no difference, for example, between $Pr(Y > 1)$ and $Pr(Y \geq 1)$.

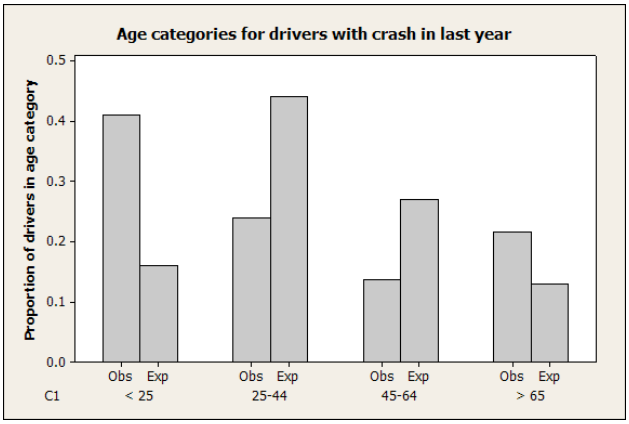


Chi-square Goodness-of-fit Test

Age category (years)	Frequency
< 25	36
25 – 44	21
45 – 64	12
> 64	19
	88







Part of Statistical Table A: χ^2 distribution (p. 670)

	α									
df	**0.999**	**0.995**	**0.99**	**0.975**	**0.95**	**0.05**	**0.025**	**0.01**	**0.005**	**0.001**
1	0.0000016	0.000039	0.00016	0.00098	0.00393	3.84	5.02	6.63	7.88	10.83
2	0.002	0.01	0.02	0.05	0.10	5.99	7.38	9.21	10.60	13.82
3	0.02	0.07	0.11	0.22	0.35	7.81	9.35	11.34	12.84	16.27
4	0.09	0.21	0.30	0.48	0.71	9.49	11.14	13.28	14.86	18.47
5	0.21	0.41	0.55	0.83	1.15	11.07	12.83	15.09	16.75	20.52
6	0.38	0.68	0.87	1.24	1.64	12.59	14.45	16.81	18.55	22.46
7	0.60	0.99	1.24	1.69	2.17	14.07	16.01	18.48	20.28	24.32
8	0.86	1.34	1.65	2.18	2.73	15.51	17.53	20.09	21.95	26.12
9	1.15	1.73	2.09	2.70	3.33	16.92	19.02	21.67	23.59	27.88
10	1.48	2.16	2.56	3.25	3.94	18.31	20.48	23.21	25.19	29.59