

Statistics Assignment, S1 2001

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Question 1

a) -1.05 to 0.55

X	AREA
-1.05	0.011494107
-0.95	0.025405906
-0.85	0.027798489
-0.75	0.030113743
-0.65	0.032297236
-0.55	0.034294386
-0.45	0.036052696
-0.35	0.037524035
-0.25	0.038666812
-0.15	0.039447933
-0.05	0.039844391
0.05	0.039844391
0.15	0.039447933
0.25	0.038666812
0.35	0.037524035
0.45	0.036052696
0.55	0.017147193
The value for the area using the mid-ordinate method	0.561622793
The value for the area using the Z tables	0.5619
Difference	0.000277207
% Difference	0.049358224

b) 0.15 to 1.75

X	AREA
0.15	0.019723967
0.25	0.038666812
0.35	0.037524035
0.45	0.036052696
0.55	0.034294386
0.65	0.032297236
0.75	0.030113743
0.85	0.027798489
0.95	0.025405906
1.05	0.022988214
1.15	0.020593627
1.25	0.018264909

1.35	0.016038333
1.45	0.013943057
1.55	0.0120009
1.65	0.010226492
1.75	0.004313866
The value for the area using the mid-ordinate method	0.400246665
The value for the area using the Z tables	0.4003
Difference	0.00005333
% Difference	0.013325424

c) -1.55 to 0.05

X	AREA
-1.55	0.00600045
-1.45	0.013943057
-1.35	0.016038333
-1.25	0.018264909
-1.15	0.020593627
-1.05	0.022988214
-0.95	0.025405906
-0.85	0.027798489
-0.75	0.030113743
-0.65	0.032297236
-0.55	0.034294386
-0.45	0.036052696
-0.35	0.037524035
-0.25	0.038666812
-0.15	0.039447933
-0.05	0.039844391
0.05	0.019922196
The value for the area using the mid-ordinate method	0.459196411
The value for the area using the Z tables	0.4593
Difference	0.000103589
% Difference	0.02255883

Question 2

a)

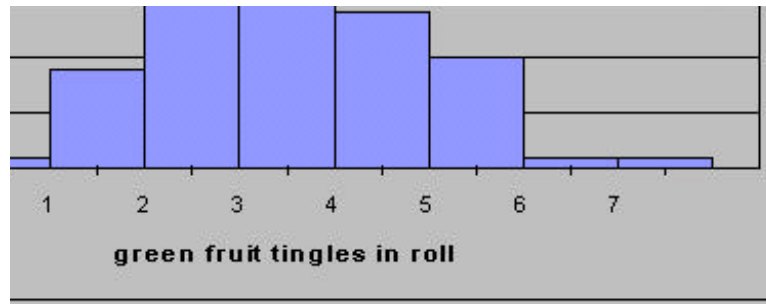
The class set of data for number of green fruit tingles in a roll

3	3	3	3	3
4	4	1	5	3
4	3	5	1	4
7	1	2	4	4
2	3	2	1	1
2	2	3	4	1
3	4	5	6	5
4	5	2	2	5
4	5	2	2	5
3	2	2	4	5
3	3	2	3	2
3	4	2	3	2
3	2	1	3	4
2	3	5	2	2
2	1	2	3	3
0	1	2	3	4

b)

Frequency distribution table for number of green fruit tingles in a roll

x	f	fx	$(x-u)^2$
0	1	0	8.850625
1	9	9	3.900625
2	22	44	0.950625
3	22	66	0.000625
4	14	56	1.050625
5	10	50	4.100625
6	1	6	9.150625
7	1	7	16.200625
	80	238	44.205



c)

class	class center	f	fx	$(x-u)^2$
1.6 - 2	1.8	2	3.6	1.485352
2.1 - 2.5	2.3	2	4.6	0.516602
2.6 - 3	2.8	5	14	0.047852
3.1 - 3.5	3.3	3	9.9	0.079102
3.6 - 4	3.8	3	11.4	0.610352
4.1 - 4.5	4.3	0	0	1.641602
4.6 - 5	4.8	1	4.8	3.172852
	23.1	16	48.3	7.553711

d)

Frequency distribution table for population of fruit tingles

x	f	fx	$(x-u)^2$
0	1	0	8.850625
1	9	9	3.900625
2	22	44	0.950625
3	22	66	0.000625
4	14	56	1.050625
5	10	50	4.100625
6	1	6	9.150625
7	1	7	16.200625
Σ	80	238	44.205

$$\mu = 2.975$$

$$\text{standard deviation} = 0.43097$$

To find mean

$$m = \frac{\Sigma(fx)}{\Sigma(f)}$$

$$m = \frac{238}{80}$$

$$m = 2.95$$

To find standard deviation

$$s = \sqrt{\frac{\Sigma(x-m)^2}{n}}$$

$$s = \sqrt{\frac{44.205}{238}}$$

$$s = \sqrt{0.1857}$$

$$s = 0.4309$$

e)

class	class center	f	fx	$(x-u)^2$
1.6 - 2	1.8	2	3.6	1.485352
2.1 - 2.5	2.3	2	4.6	0.516602
2.6 - 3	2.8	5	14	0.047852
3.1 - 3.5	3.3	3	9.9	0.079102
3.6 - 4	3.8	3	11.4	0.610352
4.1 - 4.5	4.3	0	0	1.641602
4.6 - 5	4.8	1	4.8	3.172852
	23.1	16	48.3	7.553711

$$\mu = 3.01875$$

standard deviation = 0.39544

To find mean

$$\bar{m} = \frac{\Sigma(fx)}{\Sigma(f)}$$

$$\bar{m} = \frac{43.8}{16}$$

$$\bar{m} = 3.018$$

To find standard deviation

$$s = \sqrt{\frac{\Sigma(x - \bar{m})^2}{n}}$$

$$s = \sqrt{\frac{7.553}{48.3}}$$

$$s = \sqrt{0.15637}$$

$$s = 0.3954$$

f) There is a relation because one is the stats for the whole population and one is the stats for the mean of the samples the population was made up of.