Statistics at Square One

Answers to exercises

1.1 Median 0.71, range 0.10 to 1.24, first quartile 0.535, third quartile $0.84 \mu mol/24\ hr$

2.1 Mean = 2.41, SD = 1.27.

2.2 Mean = $0.697 \mu mol/24\ hr$, SD = $0.0214 \mu mol/24\ hr$, range .0.215 to $1.179 \mu mol/1$

2.3 Points 0.10 and 1.24. 2/40 or 5%.

3.1 SE(mean) = $0.074 \mu mol/24\ hr$

3.2 A uniform or flat distribution. Population mean 4.5, population SD 2.87.

3.3 The distribution will be approximately Normal, mean 4.5 and SD 287/ $\sqrt{5}$ = 1.28.

4.1 The reference range is 12.26 - 57.74, and so the observed value of 52 is included in it.

4.2 95% CI 32.73 to 37.27.

5.1 0.42 g/dl, z = 3.08 0.001<P<0.01, difference = 1.3 g/dl, 95% CI 0.48 to 2.12 g/dl.

5.2 0.23 g/dl, P<0001.

6.1 SE (percentage) = 2.1%, SE (difference) = 3.7%, difference = 3.4%. 95% CI -3.9 to 10.7%, z = 0.94, P = 0.35.

6.2 Yes, the traditional remedy, z = 2.2, P = 0.028.

7.1 37.5 to 40.5 KA units.

7.2 t = 2.652, d.f. = 17, 001<P<0.02.

7.3 0.56g/dl, t = 1.243, d.f.=20, 0.1<P<05, 95% CI -0.38 to 1.50g/dl.

7.4 15 days, t = 1.758, d.f. = 9, 0.1<P<05, 95% CI -4.30 to 34.30 days.

8.1 Standard χ^2 = 23.295, d.f. = 4, P>0.5. Trend χ^2 = 2.25, d.f. = 1, P = 0.13.

8.2 χ^2 = 3.916, d.f. = 1, 0.02<P<0.05, difference in rates 9%, 95% CI 0.3 to 17.9%.

8.3 χ^2 = 0.931, d.f. = 1, 0.1<P<0.5, difference in rates 15%, 95% CI -7.7 to 38%.

8.4 χ^2 = 8.949, d.f. = 3, 0.02<P<0.05. Yes, practice C; if this is omitted the remaining practices give χ^2 = 0.241, d.f. = 2, P>0.5. (Both χ^2 tests by quick method.)

9.1 Sickness rate in first department 28%, in second department 8%, difference 20% (approximate 95% CI = -6 to 45%, P = 0.24 (Fisher's Exact test mid P)). P is calculated from 2 x (0.5 x 0.173 + 0.031).

10.1 Smaller total = -30. No.

10.2 Mann-Whitney statistic = 74. The group on the new remedy. No.

11.1 r = -0.848.

11.2 rs = -0.867.

11.3 y = 36.1 - 2.34x. This means that, on average, for every 1 mile increase in mean distance the attendance rate drops by 2.34%. This can be safely accepted only within the area measured here.

11.4 SE = 0.39, 95% CI = -2.34 - 2.145 x 0.39 to -2.34 + 2.145 x 0.39 = -3.1 to -1.5%.

12.1 O_A = 6, t_A = 8.06, O_B = 8, E_B = 5.94. Log rank χ^2 = 1.24, d.f. = 1, 0.1<P<0.5.

12.2 Risk = 0.55, 95% CI 0.19 to 1.60.

13.1 Matched case control study.

13.2 Cohort study.

13.3 Cross sectional study.

13.4 Randomised controlled trial.

13.5 Quasi experimental design.
