
Elementary Statistics – Practice Test – Chapter 7

1. In a random sample of 16,405 babies who were born stillborn, 8,609 were male. Test the claim at 1% significance that more than 51.5% of stillborn babies are male.
2. From a random sample of 51 litters of rats, the mean litter size is 6.11, with an assumed population standard deviation is 2.27. Test the claim that the mean litter size is equal to seven, against the claim that the mean is not seven. Use 2% significance.
3. Hyoscine is a drug which was once used to improve sleep. In 1908, William *Student* Gosset (the developer of Student's t distribution) studied this drug by measuring amounts of sleep gained by ten different patients. The mean sleep gained was 2.33 hours, with a standard deviation of 2.00 hours. Assuming that these values are selected from a normal population, test the claim at 6% significance that the mean amount of sleep gained is less than 3 hours.
4. At the same time that William *Student* Gosset studied Hyoscine using 10 different patients, he also studied another drug, Hyoscyamine, with those same ten patients. The results are tabulated below.

Patient #	Hyoscine	Hyoscyamine	Difference
1	1.9	0.7	1.2
2	0.8	-1.6	2.4
3	1.1	-0.2	1.3
4	0.1	-1.2	1.3
5	-0.1	-0.1	0.0
6	4.4	3.4	1.0
7	5.5	3.7	1.8
8	1.6	0.8	0.8
9	4.6	0.0	4.6
10	3.4	2.0	1.4

Test the claim at 1% significance that the mean sleep gained is higher for Hyoscine than for Hyoscyamine. Assume that the population of differences is normal.