

## Homework Solutions

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#### Exercise 16

(a) Let  $\mu$  be the average waste compared to potential waste.

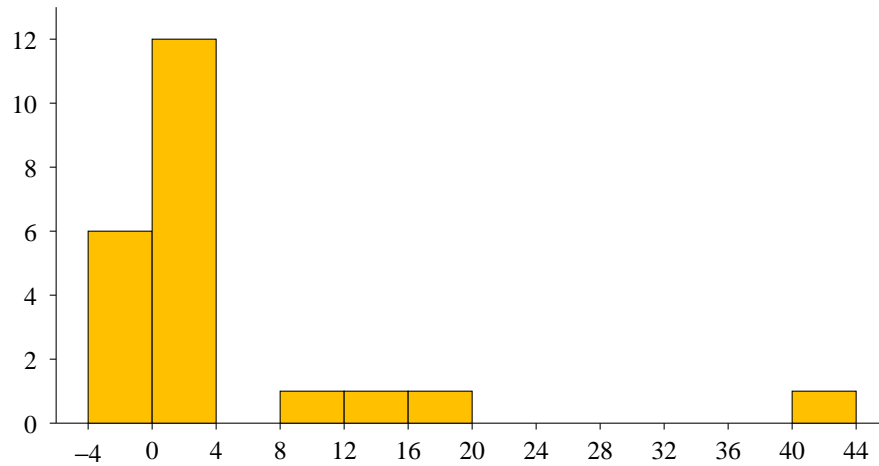
$$H_0 : \mu = 0$$

$$H_1 : \mu < 0$$

(b) The test statistic is  $t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$ . Use 1-Var-Stats to get  $\bar{x}$  and  $s$ . We get  $\bar{x} = 4.523$  and  $s = 10.0324$ . The value of  $t$  is  $t = \frac{4.523 - 0}{10.032/\sqrt{22}} = \frac{4.523}{2.139} = 2.115$ . Then the  $p$ -value is  $\text{tcdf}(-E99, 2.115, 21) = 0.9767$ .

(c) No, they are not. The  $p$ -value is *much* larger than  $\alpha$ .

(d) Here is the histogram.



The assumption of normality does not appear to be valid. Another necessary assumption is that the data constitute a simple random sample.