Discussion Section 5

(32 \text{ mmole/kg}) - (29.8 \text{ mmole/kg})

29.8 \text{ mmole/kg} \quad \text{for } \mu

\frac{\mu_0 - \bar{y}}{\bar{y}} = \frac{+2.2}{29.8} = 7.4\% \text{ larger than data mean } \bar{y}; \text{ this would well be a practically meaningful difference } \text{(consult biology expert)}

\text{Therefore, the pop. represents (in your judgment) the broadest scope of valid generalizability extruded from the data sample.}
This is an inference problem because \( \bar{y} \) is known and \( \mu \) is unknown.
<table>
<thead>
<tr>
<th>unknown pop. quantity of main interest</th>
<th>$\mu = \text{pop. mean calcium concentration}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimate of $\mu$</td>
<td>$\overline{Y} = 29.8 \text{ mmole/kg}$</td>
</tr>
<tr>
<td>five or take for $\overline{Y}$ as est. of $\mu$</td>
<td>$SE(\overline{Y}) = 0.5 \text{ mmole/kg}$</td>
</tr>
<tr>
<td>95% interval for $\mu$</td>
<td>$(29.8 \pm 1.1) \text{ mmole/kg}$</td>
</tr>
</tbody>
</table>

$EY$ of $\overline{Y} = \text{E}_{\text{IID}}(\overline{Y}) = \mu$

$\text{est.} SE$ of $\overline{Y} = SE_{\text{IID}}(\overline{Y}) = \frac{\overline{S}}{\sqrt{n}} = \frac{1.8}{\sqrt{13}} = 0.5 \text{ mmole/kg}$

$95\%$ int. $= \overline{Y} \pm (t_{n-1}) \cdot \frac{S}{\sqrt{n}}$

$= 29.8 \pm (2.179) \cdot 0.5$

$= (29.8 \pm 1.1) \text{ mmole/kg}$
95% int. form $\mu_0$

\[ \frac{1}{4} \]

28.7 29.8 30.9 32

\[ \mu_0 = 32 \]

since

is not in the 95% int. for $\mu$

the theory that $\mu = \mu_0 = 32$ is not supported by the data

the difference between $\mu_0 = 32$ and $\bar{y} = 29.8$ is statistically significant

their difference is hard to attribute to unlucky random sampling

this difference is probably real