STAT 512  Statistical Methods       Fall 2014

Quiz 15: Confidence interval for population mean

Assigned on Tues Nov 4; due on Thur Nov 6. You may work with a group of as many as 4 people, submitting one quiz with all names, provided that you all contribute to the work. You may use your notes.

Twenty years ago a statistician collected data on the prices of a sample of 208 prizes used on The Price is Right game show, during the contestant selection phase of the game (when contestants bid on prizes to see who comes closest). A histogram and summary statistics for these data appear below.

![Histogram](image)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Minimum</th>
<th>Q1</th>
<th>Median</th>
<th>Q3</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>price</td>
<td>208</td>
<td>1140.3</td>
<td>26.9</td>
<td>388.4</td>
<td>413.0</td>
<td>851.3</td>
<td>1158.5</td>
<td>1498.8</td>
<td>1995.0</td>
</tr>
</tbody>
</table>

1. Identify the observational units and variable for these data.

2. Report the critical value $t^*$ corresponding to 99% confidence for the population mean price.

3. Use the summary statistics above to produce (by hand) a 99% confidence interval for the population mean price.

4. Comment on whether the technical conditions that underlie the validity of this $t$-procedure appear to be satisfied.

5. Based on the histogram, estimate how many and what proportion of these 208 prizes have a price that falls within the 99% confidence interval. Should this proportion be close to .99? Explain why or why not.