Introduction for Faculty Colleagues

*Margin of Error* is a short assignment to help statistics students deepen the concept of margin of error within the larger concept of confidence intervals.

**The Course**
MTH 110: General Statistics is the first-year core mathematics requirement for Elon University. The course prepares students to consumer, create, and communicate statistics. This assignment takes place late in the semester during the third portion of the course as we study concepts and mechanisms of inferential statistics.

**Aims**
I have written the assignment to address a student who has missed a single class. In an attempt to help this fictitious student get caught up, students writing the assignment will refine their own understandings by putting concepts and procedures into language which is easily understood by their peers.

**Important Features**
The written piece is graded by three peers only. The rubric will actually free me from grading this assignment and should reinforce student learning in the process.

**Changes from Earlier Versions**
This was originally a weakly structured homework assignment to be completed between consecutive class periods. This new version requires the same amount of student computation as the old homework, but the focus pulls the work in line with course goals and appears far less like busy work and much more like the good work of the course. The included rubric allows for student grading. As a result, the students have become much more critical about how their peers have met the assignment requirements and my workload was actually diminished.
The Assignment I Distribute to Students

MTH 110 – General Statistics

Margin of Error

MTH 100: General Statistics asks each student to refine their abilities to consume, create, and communicate statistical information. Since we’ve been coming to a deeper understanding of the creation and use of confidence intervals as a decision-making tool, tonight’s homework will be to create a one-page document reflecting your deep understanding of the margin of error.

Overview
This assignment asks you to find a news article with an estimate for a proportion and also locate the margin of error. For example, in election years it is quite easy to find articles showing that a candidate is carrying 60% of the vote with a ±3% margin of error. Once you’ve found such an article either online or in print, your job is to write an explanation of how this information denotes a confidence interval, what information the confidence interval is providing in the context of the problem, and any other conclusions or judgments you can make on the appropriateness of the margin of error specific to the context of the article. Your audience is a student who missed today’s work with confidence intervals and margin of error. By processing this information for an absent student, you will strengthen your own deep understanding of this statistical concept.

Threshold
To be accepted for grading, the write-up must have the following:

- Length of 250 – 350 words.
- A citation of the original article so that the absent student might find it.
- An introductory paragraph with the summary of the article.
- The confidence interval generated by the estimate and margin of error.
- Some discussion relevant to the context of the article.

Expectations
For the highest quality evaluation of your work, the write-up must reflect the following:

- An introduction which clearly states the context of the article and why the estimate is necessary in context.
- Correct conversion from the estimate and margin of error found in the article to the resulting confidence interval.
• An appropriate and clear interpretation of the confidence interval in the context of the problem.

• Appropriate value judgments made about the margin of error within context.

• A strong focus keeping the absent student as the audience for the write-up.

**Process**

1. Find an article with an estimate and margin of error and create its citation.

2. Summarize the article for a student who was absent today.

3. Create the confidence interval and analyze it within the context of the article. *The analysis is your chance to make your thinking visible, so try to explain everything clearly.*

4. Bring a single hardcopy to our next class meeting. Do not put your name on this copy so that it may remain anonymous. Your write-up will be graded by three of your peers with your final grade representing the average of the three grades.
## Rubric for Peer Grading

<table>
<thead>
<tr>
<th>Expectation</th>
<th>Exceeded</th>
<th>Met</th>
<th>Not Met</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>Clearly summarizes article and importance of the estimate.</td>
<td>Summarizes article.</td>
<td>Weak and unclear summary.</td>
</tr>
<tr>
<td><strong>Conversion</strong></td>
<td></td>
<td>Conversion is correct.</td>
<td>Conversion incorrect.</td>
</tr>
<tr>
<td><strong>Interpretation of Interval</strong></td>
<td>Well written interpretation of the confidence interval in the context of the problem including the range of possible values, the confidence level, and any other information specific to the chosen article.</td>
<td>Correct interpretation of confidence interval in context including some, but not all key characteristics.</td>
<td>Incorrect interpretation of confidence interval.</td>
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<tr>
<td><strong>Discussion of the impact of margin of error</strong></td>
<td>Complete discussion which considers appropriateness of stated margin of error and its impact on the information put forth in the article.</td>
<td>Emerging discussion which shows some understanding of the importance of the margin of error in problem context.</td>
<td>Incorrect or incomplete interpretation of margin of error with little or no discussion.</td>
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<tr>
<td><strong>Attention to audience</strong></td>
<td></td>
<td>Written piece has consistent focus on “absent student” audience.</td>
<td>Attention to specified audience waivers or is missing.</td>
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