Comparing Percentages in Tables
Using Likely Grammar

<table>
<thead>
<tr>
<th>ID</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>75</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>58</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>76</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>89</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>77</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>73</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>72</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>88</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>90</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>39</td>
<td>5</td>
</tr>
</tbody>
</table>

**Project requirements: PR3B**

1. Compare percentages using likely grammar
2. This demo uses the symbols (row #1, Q2, etc.) and the practice questions
3. Q1-Q4 are binary with values of zero and one.
4. 1 stands for YES; 0 stands for NO

**ASSIGNMENT:**

1) Create specified pivot tables using demo data.

   Tables are indexed by Q1 (row) & Q2 (col)
   Identify the common part rows/cols.
   Select CP:R* or CP:C* for comparison.

2) Form arithmetic comparisons of the CP numbers.

   Show all four kinds of comparisons
   Can use "prevalent...among"
   Do not show symbols such as row #1 or Q2.
   Use both "likely to" and "likely among"

3) Compare matching values using likely grammar.

   Can use "prevalent...among"
   Do not show symbols such as row #1 or Q2.
   Use both "likely to" and "likely among"

**Population: Students**

**Questions**

- Q1 Are you female?
- Q2 Are you a senior?
- Q3 Do you live on campus?
- Q4 Are you a business major?
- Q7 What is your height?
- Q8 Years in college?

**Common-part comparison:**

- Two percentages having a common-part
- 100% table: common row or column
- 2-way table: common row or column

**Total cell:** the cell in the total column and total row
**Margin cell:** a cell in a total column or total row
**Body cell:** a cell not in a total col and not in total row
Comparing Percentages in Tables
Using Likely Grammar

PR3B: COMPARE PERCENTAGES IN TABLES USING LIKELY GRAMMAR

Construct a 100% row tables for Q2 by Q1. Compare common-part numbers using all 4 arithmetic comparisons. Using "% more", compare two common-part body percentages using "likely to" and "likley among" grammars.

<table>
<thead>
<tr>
<th>Count of Q1</th>
<th>Q2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Q1</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>1</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>Total</td>
<td>60%</td>
<td>40%</td>
</tr>
</tbody>
</table>

CP: C1  CP: C2
Arithmetic comparisons of selected numbers
53% is 19 percentage points more than 32%
53% is 1.66 times as much as 32%
53% is 66% more than 32%
53% is 0.66 times more than 32%

Likely-to
Symbolic: Row #1 subjects are 66% more likely to be in Col #2 than [are] Row #2 subjects.
Symbolic: Those saying No to Q1 are 66% more likely to say Yes to Q2 than those saying Yes to Q1.
Reality: Among students, men are 66% more likely to be seniors than [are] women.

Likely...among
Symbolic: Being in Col #2 is 66% more likely among Row #1 than [among] Row #2.
Symbolic: Saying Yes to Q2 is 66% more likely among No to Q1 than [among] Yes to Q1.
Reality: Among students, non-seniors are 66% more likely to be female than [are] seniors.

Likely-to
Symbolic: Col #1 subjects are 42% more likely to be in Row #2 than [are] Col #2 subjects.
Symbolic: Those saying No to Q2 are 42% more likely to say Yes to Q1 than those saying Yes to Q2.
Reality: Among students, non-seniors are 42% more likely to be female than [are] seniors.

Likely...among
Symbolic: Being in row #2 is 42% more likely among Col #1 subjects than [among] Col #2 subjects.
Symbolic: Saying Yes to Q1 is 42% more likely among No to Q2 subjects than [among] Yes to Q2.
Reality: Women 42% more likely among non-seniors than [among] seniors.

Construct a 100% column table for Q1 by Q2. Compare common-part numbers using all 4 arithmetic comparisons. Using "% more", compare two common-part body percentages using "likely to" and "likley among" grammars.

<table>
<thead>
<tr>
<th>Count of Q1</th>
<th>Q2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Q1</td>
<td>29%</td>
<td>50%</td>
</tr>
<tr>
<td>1</td>
<td>71%</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

CP: R1  CP: R2
Arithmetic comparisons of selected numbers
71% is 21 percentage points more than 50%
71% is 1.42 times as much as 50%
71% is 42% more than 50%
71% is 0.42 times more than 50%

Likely-to
Symbolic: Col #1 subjects are 42% more likely to be in Row #2 than [are] Col #2 subjects.
Symbolic: Those saying No to Q2 are 42% more likely to say Yes to Q1 than those saying Yes to Q2.
Reality: Among students, non-seniors are 42% more likely to be female than [are] seniors.

Likely...among
Symbolic: Being in row #2 is 42% more likely among Col #1 subjects than [among] Col #2 subjects.
Symbolic: Saying Yes to Q1 is 42% more likely among No to Q2 subjects than [among] Yes to Q2.
Reality: Women 42% more likely among non-seniors than [among] seniors.

Construct a two way half table of Q3 indexed by Q1 and Q2
Using "% more", compare two common-part body percentages using "likely to" and "likley among" grammars.

<table>
<thead>
<tr>
<th>Average of Q3</th>
<th>Q2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Q1</td>
<td>57%</td>
<td>88%</td>
</tr>
<tr>
<td>1</td>
<td>29%</td>
<td>38%</td>
</tr>
<tr>
<td>Total</td>
<td>38%</td>
<td>63%</td>
</tr>
</tbody>
</table>

CP: R1  CP: R2
Arithmetic comparisons of selected numbers
88% is 31 percentage points more than 57%
88% is 1.54 times as much as 57%
88% is 54% more than 57%
88% is 0.54 times more than 56%

Likely-to
Symbolic: Among Row #1 subjects, Col #2 are 54% more likely to be Q3=Yes than [are] Col #1.
Symbolic: Among No to Q1, Yes to Q2 are are 54% more likely to say Yes to Q3 than those saying No to Q2.
Reality: Among male students, seniors are 54% more likely to live on campus than [are] non-seniors.

Likely...among
Symbolic: Among row #1, saying Yes to Q3 are 54% more likely among Col #2 than [among] Col #1.
Symbolic: Among Yes to Q1, saying Yes to Q3 is 54% more likely among No to Q1 than [among] Yes to Q1.
Reality: Among male students, living on campus is 54% more likely among sniors than non-seniors.