Interpreting Tables and Proportions Practice

As you've seen so far in POLI 30, data are often presented in tables. Learning how to interpret these tables is important. Also important is learning to figure out which pieces are relevant to solve word problems. This practice exercise focuses on developing the latter skill.

1. Pew Research Center recently conducted a survey on a representative survey of U.S. adults (January 10-15, 2018). Below are some of the results to the following question: “Thinking about the situation in the Middle East these days, do you think the president is favoring Israel too much, favoring the Palestinians too much, or striking about the right balance?” [Link](http://www.people-press.org/2018/01/23/republicans-and-democrats-grow-even-further-apart-in-views-of-israel-palestinians/)

<table>
<thead>
<tr>
<th></th>
<th>Republicans</th>
<th>Democrats</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>63</td>
<td>353</td>
<td>416</td>
</tr>
<tr>
<td>Palestinians</td>
<td>11</td>
<td>38</td>
<td>49</td>
</tr>
<tr>
<td>Right Balance</td>
<td>417</td>
<td>161</td>
<td>578</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>74</td>
<td>215</td>
<td>289</td>
</tr>
<tr>
<td>Total</td>
<td>565</td>
<td>767</td>
<td>1338</td>
</tr>
</tbody>
</table>

a. What percentage of Republicans think that the president is striking about the right balance?
b. What percentage of Democrats think that the president is favoring Israel?
c. What percentage of the whole sample thinks that the president is favoring the Palestinians?
d. What percentage of the whole sample reported that they didn’t know?
e. Say you wanted to see whether there was a difference between the proportion of Democrats who think that the president is striking the right balance and the proportion of Republicans who think that the president is striking the right balance.
   i. What would your null hypothesis be?
   ii. What would your alternative hypothesis be?
   iii. Calculate the 95% confidence interval for the difference between these two proportions.

2. The figure below shows results from a Pew Research Center survey conducted from October 25-30, 2017. It shows the percentage of respondents who say the U.S. military campaign against Islamic militants in Iraq and Syria has increased, decreased, or not made much difference [for] the chances of terrorist attacks in the US. Each row of the figure adds to approximately 100%. The top row shows the results from the sample as a whole, the second row shows the results among Republicans, and the bottom row shows the results among Democrats. There were 587 Republicans and 737 Democrats in the sample. [Link](http://www.people-press.org/2017/11/09/partisans-have-starkly-different-opinions-about-how-the-world-views-the-u-s/11-9-2017_08/)
Public split on the impact of campaign against ISIS on chance of terrorist attacks in the United States

% who say U.S. military campaign against Islamic militants in Iraq and Syria has _____ the chances of terrorist attacks in the U.S.

<table>
<thead>
<tr>
<th></th>
<th>Increased</th>
<th>Not made much difference</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>27</td>
<td>46</td>
<td>23</td>
</tr>
<tr>
<td>Rep/Lean Rep</td>
<td>18</td>
<td>47</td>
<td>32</td>
</tr>
<tr>
<td>Dem/Lean Dem</td>
<td>33</td>
<td>46</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: Don’t know/refused responses not shown. Source: Survey conducted Oct. 25-30, 2017.

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a. What percentage of Republicans think that the military campaign has increased the chances of terrorist attacks in the US? The proportion?
b. What percentage of Democrats think that the military campaign has increased the chances of terrorist attacks in the US? The proportion?
c. What is the standard error of the percentage of Republicans who think that the military campaign has decreased the chances of terrorist attacks in the US?
d. What is the standard error of the percentage of Democrats who think that the military campaign has decreased the chances of terrorist attacks in the US?

3. Go to [http://www.pewresearch.org/](http://www.pewresearch.org/) and find a report that is interesting to you. See if you can conduct a difference of proportions test on your own using the data and topline results available in the reports. You should look to the methodology section to see the sample sizes (typically 1503).
Interpreting Tables Practice – Answer Key

As you’ve seen so far in POLI 30, data are often presented in tables. Learning how to interpret these tables is important. Also important is learning to figure out which pieces are relevant to solve word problems. This practice exercise focuses on developing the latter skill.


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a. What percentage of Republicans think that the president is striking about the right balance?

\[
\frac{417}{565} = 0.738 = 73.8\%
\]

b. What percentage of Democrats think that the president is favoring Israel?

\[
\frac{353}{767} = 0.46 = 46\%
\]

c. What percentage of the whole sample thinks that the president is favoring the Palestinians?

\[
\frac{49}{1338} = 0.0366 = 3.7\%
\]

d. What percentage of the whole sample reported that they didn’t know?

\[
\frac{289}{1338} = 0.2159 = 21.6\%
\]

e. Say you wanted to see whether there was a difference between the proportion of Democrats who think that the president is striking the right balance and the proportion of Republicans who think that the president is striking the right balance.

i. What would your null hypothesis be?
There is no difference between the proportion of Democrats and the proportion of Republicans who think that the president is striking the right balance.

\[ P_{\text{Republican}} - P_{\text{Democrat}} = 0 \]

ii. What would your alternative hypothesis be?

There is a difference between the proportion of Democrats and the proportion of Republicans who think that the president is striking the right balance.

\[ P_{\text{Republican}} - P_{\text{Democrat}} \neq 0 \]

iii. Calculate the 95% confidence interval for the difference between these two proportions.

First I’m going to write out my givens:

- Proportion of Republicans = 417/565 = 0.738
- Proportion of Democrats = 161/767 = 0.2099
- N Republicans = 565
- N Democrats = 767

Next, I’m going to calculate the standard error for Republicans and Democrats:

Republicans:

\[ \sqrt{(0.738) \times (1 - 0.738)} \frac{\sqrt{571}}{\sqrt{23.9}} = \frac{0.439}{23.9} = 0.018 \]

Democrats:

\[ \sqrt{(0.2099) \times (1 - 0.2099)} \frac{\sqrt{767}}{\sqrt{27.7}} = \frac{0.407}{27.7} = 0.0147 \approx 0.015 \]

Now I should have all of the pieces I need to calculate the 95% confidence interval for the difference of the proportions. So, I plug everything in and calculate the result:

\[ (\hat{P}_{\text{Rep}} - \hat{P}_{\text{Dem}}) \pm 2 \times \sqrt{(\text{std. error}_{\text{Rep}})^2 + (\text{std. error}_{\text{Dem}})^2} \]

\[ (0.738 - 0.2099) \pm 2 \times \sqrt{0.018^2 + 0.015^2} \]

\[ (0.5281) \pm 2 \times \sqrt{0.00324 + 0.00225} \]

\[ 0.5281 \pm 2 \times 0.0234 \]
\[ .5281 \pm .047 \]
\[ .5281 + .047 = .5751 \]
\[ .5281 - .047 = .4811 \]

95\% Confidence Interval: (.48, .58)

Because 0 is not in our confidence interval, we can reject the null hypothesis and conclude with 95\% confidence that the difference between the true proportion of Republicans and the true proportion of Democrats who think that the president is striking the right balance is not zero. We find that there is a significantly greater proportion of Republicans who think the president is striking the right balance than the proportion of Democrats who think the president is striking the right balance.

2. The figure below shows results from a Pew Research Center survey conducted from October 25-30, 2017. It shows the percentage of respondents who say the U.S. military campaign against Islamic militants in Iraq and Syria has increased, decreased, or not made much difference [for] the chances of terrorist attacks in the US. Each row of the figure adds to approximately 100\%. The top row shows the results from the sample as a whole, the second row shows the results among Republicans, and the bottom row shows the results among Democrats. There were 587 Republicans and 737 Democrats in the sample. [http://www.people-press.org/2017/11/09/partisans-have-starkly-different-opinions-about-how-the-world-views-the-u-s/11-9-2017_08/](http://www.people-press.org/2017/11/09/partisans-have-starkly-different-opinions-about-how-the-world-views-the-u-s/11-9-2017_08/)
a. What percentage of Republicans think that the military campaign has **increased** the chances of terrorist attacks in the US? The proportion?

   Percentage: 18%, Proportion: 0.18

b. What percentage of Democrats think that the military campaign has **increased** the chances of terrorist attacks in the US? The proportion?

   Percentage: 33%, Proportion: 0.33

c. What is the standard error of the percentage of Republicans who think that the military campaign has **decreased** the chances of terrorist attacks in the US?

   Proportion: 0.32
   N: 587

   \[
   \frac{\sqrt{(0.32)(1 - 0.32)}}{\sqrt{587}} = \frac{\sqrt{0.2176}}{24.23} = \frac{0.466}{24.23} = 0.019
   \]

d. What is the standard error of the percentage of Democrats who think that the military campaign has **decreased** the chances of terrorist attacks in the US?

   Proportion: 0.18
   N: 737

   \[
   \frac{\sqrt{(0.18)(1 - 0.18)}}{\sqrt{737}} = \frac{\sqrt{0.1476}}{27.15} = \frac{0.384}{24.23} = 0.016
   \]

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