DSID-4 Example Calculation for Applying Regression Information in the Statistical Results Table

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Introduction and Definition of Terms

The parameter values in Table 1 can be used to apply the regression results for DSID-3 to labeled levels for ingredients in MVM and omega-3 fatty acid supplement products. Calculations for the following list of terms are defined below:

PM% = Predicted Mean Percent Difference from Label
PM = Predicted Mean Amount per Serving

SEM% = Standard Error (SE) of the Predicted Percent Difference from Label (Mean)
SEM = SE for Predicted Mean

SEO% = SE of the Predicted Percent Difference from Label (Individual Observation)
SEO = SE for Predicted Observation

Important Notes

When performing these calculations, the parameter values must not be rounded. Rounding parameter values will produce inaccurate results.
The Excel spreadsheet for Table 1 may not display all of the digits for a parameter value. Please click on the individual cell to get the complete value, and do not rely on the cell as displayed.
E represents "times ten raised to the power of." Therefore, -2.26323E-05 is equivalent to -2.26323 x 10^{-5}
DSID reports results to 3 significant digits for PM and PM%, and to 2 significant digits for SEM and SEO.
Example Calculations

These example calculations are for a children's (age 4 and up group) multivitamin/mineral supplement with a labeled level of 30 mcg of iodine. Each parameter is assigned a column letter in this document, so as to make the example calculations easier to read.

1. Calculating Predicted Mean Value

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prediction of the Mean Intercept</td>
<td>Prediction of the Mean Linear</td>
<td>Prediction of the Mean Quadratic</td>
</tr>
<tr>
<td></td>
<td>86.63869248</td>
<td>-1.806314473</td>
<td>0.009299788</td>
</tr>
</tbody>
</table>

Predicted Percent Difference from Label (PM%)
PM% = (Column A) + [(Column B) * (Label Amount)] + [(Column C) * (Label Amount^2)]
PM% = (86.638692482013) + [(-1.80631447346639) * (30)] + [(0.00929978820645634) * (30^2)] = 40.819067663832

Predicted Mean Amount per Serving (PM)
PM = (Label Amount) * [1 + (PM% / 100)]
PM = (30) * [1 + (40.819067663832/100)] = 42.2457202991496

2. Calculating Standard Error of the Predicted Mean

<table>
<thead>
<tr>
<th></th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SE of the Predicted Mean Intercept</td>
<td>SE of the Predicted Mean Linear</td>
<td>SE of the Predicted Mean Quadratic</td>
<td>SE of the Predicted Mean Cubic</td>
<td>SE of the Predicted Mean Quartic</td>
<td>SE of the Predicted Mean Quintic</td>
<td>SE of the Predicted Mean Sextic</td>
<td>SE of the Predicted Mean Septic</td>
<td>SE of the Predicted Mean Octic</td>
</tr>
<tr>
<td></td>
<td>17.77804514</td>
<td>0.29044245</td>
<td>-0.049325526</td>
<td>0.00154952</td>
<td>-2.1744E-05</td>
<td>1.53E-07</td>
<td>-4.68E-10</td>
<td>0</td>
<td>2.23E-15</td>
</tr>
</tbody>
</table>
SE of the Predicted Percent Difference from Label for Mean (SEM)

\[
\text{SEM}\% = (\text{Column D}) + [(\text{Column E}) \times (\text{Label Amount})] + [(\text{Column F}) \times (\text{Label Amount}^2)] + [(\text{Column G}) \times (\text{Label Amount}^3)] \\
+ [(\text{Column H}) \times (\text{Label Amount}^4)] + [(\text{Column I}) \times (\text{Label Amount}^5)] + [(\text{Column J}) \times (\text{Label Amount}^6)] \\
+ [(\text{Column K}) \times (\text{Label Amount}^7)] + [(\text{Column L}) \times (\text{Label Amount}^8)]
\]

\[
\text{SEM}\% = (17.7780451447202 + [(0.290442449580882) \times (30)] + [(-0.0493255260170493) \times (30)] + [(0.00154951656276245) \times (30)] \\
+ [(-0.000021744123917518) \times (30)] + [(1.52656478992153E-07) + (30)] \\
+ [(-4.6814831782059E-10) \times (30)] + [0 \times (30)] \\
+ [(2.23461526026106E-15) \times (30)] = 9.69229046918585
\]

SE for Mean (SEM)
\[
\text{SEM} = (\text{Label Amount}) \times [(\text{SEM}\%) / 100]
\]
\[
\text{SEM} = (30) \times [(9.69229046918585) / 100] = 2.9076871407575
\]

3. Calculating Standard Error of the Predicted Observation

<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
<th>Q</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE of the Predicted</td>
<td>SE of the Predicted</td>
<td>SE of the Predicted</td>
<td>SE of the Predicted</td>
<td>SE of the Predicted</td>
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</tr>
<tr>
<td>Observation</td>
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<td>Observation</td>
<td>Observation</td>
</tr>
<tr>
<td>Intercept</td>
<td>Linear</td>
<td>Cubic</td>
<td>Quartic</td>
<td>Quintic</td>
<td></td>
</tr>
<tr>
<td>37.7663905</td>
<td>-0.4876034</td>
<td>0.009366865</td>
<td>-7.196E-05</td>
<td>1.90E-07</td>
<td>0</td>
</tr>
</tbody>
</table>

SE of the Predicted Percent Difference from Label for Individual Observation (SEO%)

\[
\text{SEO}\% = (\text{Column M}) + [(\text{Column N}) \times (\text{Label Amount})] + [(\text{Column O}) \times (\text{Label Amount}^2)] + [(\text{Column P}) \times (\text{Label Amount}^3)] \\
+ [(\text{Column Q}) \times (\text{Label Amount}^4)] + [(\text{Column R}) \times (\text{Label Amount}^5)]
\]

\[
\text{SEO}\% = (37.7663905043796) + [(-0.487603358893001) \times (30)] + [(0.00936868508222579) \times (30)] \\
+ [(-0.0000719608413513465) \times (30)] + [(1.89684186803514E-07) \times (30)] = 29.7808077864173
\]

SE for Predicted Observation (SEO)
\[
\text{SEO} = (\text{Label Amount}) \times [(\text{SEO}\%) / 100]
\]
\[
\text{SEO} = (30) \times [29.7808077864173 / 100] = 8.93424233592519
\]