DSID-3 Example Calculation for Applying Regression Information in the Statistical Results Table

Contents

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 -2.26323×10^{-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**

A	B	C
Prediction of the Mean Intercept	Prediction of the Mean Linear	Prediction of the Mean Quadratic
86.63869248	-1.806314473	0.009299788

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**

D	E	F	G	H	I	J	K	L
SE of the Predicted Mean Intercept	SE of the Predicted Mean Linear	SE of the Predicted Mean Quadratic	SE of the Predicted Mean Cubic	SE of the Predicted Mean Quartic	SE of the Predicted Mean Quintic	SE of the Predicted Mean Sextic	SE of the Predicted Mean Septic	SE of the Predicted Mean Octic
17.77804514	0.29044245	-0.049325526	0.00154952	-2.1744E-05	1.53E-07	-4.68E-10	0	2.23E-15

SE of the Predicted Percent Difference from Label for Mean (SEM)

SEM% = (Column D) + [(Column E) * (Label Amount)] + [(Column F) * (Label Amount^2)] + [(Column G) * (Label Amount^3)]
$\quad$ + [(Column H) * (Label Amount^4)] + [(Column I) * (Label Amount^5)] + [(Column J) * (Label Amount^6)]
$\quad$ + [(Column K) * (Label Amount^7)] + [(Column L) * (Label Amount^8)]
SEM% = (17.7780451447202) + [(0.290442449580882) * (30)] + [(-0.0493255260170493) * (30^2)] + [(0.00154951656276245) *(30^3)]
$\quad$ + [(-0.000021744123937151 8) * (30^4)] + [(1.52656478992153E-07) + (30^5)] + [(-4.6814831782059E-10) * (30^6)] + [0 * (30^7)]
$\quad$ + [(2.23461526026106E-15) * (30^8)] =9.69229046918585

SE for Mean (SEM)
$\quad$ SEM = (Label Amount) * [(SEM%) / 100]
$\quad$ SEM = (30) * [(9.69229046918585) / 100] = 2.90768714075575

3. **Calculating Standard Error of the Predicted Observation**

M	N	O	P	Q	R
SE of the Predicted Observation Intercept	SE of the Predicted Observation Linear	SE of the Predicted Observation Quadratic	SE of the Predicted Observation Cubic	SE of the Predicted Observation Quartic	SE of the Predicted Observation Quintic
37.7663905	-0.4876034	0.009368685	-7.196E-05	1.90E-07	0

SE of the Predicted Percent Difference from Label for Individual Observation (SEO%)
$\quad$ SEO% = (Column M) + [(Column N) * (Label Amount)] + [(Column O) * (Label Amount^2)] + [(Column P) * (Label Amount^3)]
$\quad\quad$ + [(Column Q) * (Label Amount^4)] + [(Column R) * (Label Amount^5)]
$\quad$ SEO% = (37.7663905043796) + [(-0.487603358893001) * (30)] + [(0.00936868508222579) * (30^2)]
$\quad\quad$ + [(-0.0000719608413513465) * (30^3)] + [(1.89684186803514E-07) * (30^4)] = 29.7808077864173

SE for Predicted Observation (SEO)
$\quad$ SEO = (Label Amount) * [(SEO%) / 100]
$\quad$ SEO = (30) * [29.7808077864173 / 100] = 8.93424233592519