

How to calculate exponential regression?

Authored by
stats writer

December 9, 2025

RECOMMENDED CITATION

stats writer (2025). *How to calculate exponential regression?*. PSYCHOLOGICAL SCALES.
Retrieved from <https://scales.arabpsychology.com/?p=106878>

Exponential regression is a form of regression analysis which is used to model the relationship between an independent variable and a dependent variable by fitting an exponential function to the data. To calculate exponential regression, use software such as Excel or another statistical software package to input the data and calculate the best fit exponential curve. This curve can then be used to make predictions about the relationship between the independent and dependent variables.

```
@import url('https://fonts.googleapis.com/css?family=Droid+Serif|Raleway');
```

```
h1 {  
  text-align: center;  
  font-size: 50px;  
  margin-bottom: 0px;  
  font-family: 'Raleway', serif;  
}
```

```
p {  
  color: black;  
  margin-bottom: 15px;  
  margin-top: 15px;  
  font-family: 'Raleway', sans-serif;  
}
```

```
#words {  
  padding-left: 30px;  
  color: black;  
  font-family: Raleway;  
  max-width: 550px;  
  margin: 25px auto;  
  line-height: 1.75;  
}
```

```
#words_summary {  
  padding-left: 70px;  
  color: black;  
  font-family: Raleway;  
  max-width: 550px;  
  margin: 25px auto;  
  line-height: 1.75;  
}
```

```
#words_text {  
color: black;  
font-family: Raleway;  
max-width: 550px;  
margin: 25px auto;  
line-height: 1.75;  
}
```

```
#words_text_area {  
display:inline-block;  
color: black;  
font-family: Raleway;  
max-width: 550px;  
margin: 25px auto;  
line-height: 1.75;  
padding-left: 100px;  
}
```

```
#calcTitle {  
text-align: center;  
font-size: 20px;  
margin-bottom: 0px;  
font-family: 'Raleway', serif;  
}
```

```
#hr_top {  
width: 30%;  
margin-bottom: 0px;  
border: none;  
height: 2px;  
color: black;  
background-color: black;  
}
```

```
#hr_bottom {  
width: 30%;  
margin-top: 15px;  
border: none;  
height: 2px;  
color: black;
```

```
background-color: black;
}

#words_table label, input {
display: inline-block;
vertical-align: baseline;
width: 350px;
}

#button {
border: 1px solid;
border-radius: 10px;
margin-top: 20px;

cursor: pointer;
outline: none;
background-color: white;
color: black;
font-family: 'Work Sans', sans-serif;
border: 1px solid grey;
/* Green */
}

#button:hover {
background-color: #f6f6f6;
border: 1px solid black;
}

#words_table {
color: black;
font-family: Raleway;
max-width: 350px;
margin: 25px auto;
line-height: 1.75;
}

#summary_table {
color: black;
font-family: Raleway;
max-width: 550px;
margin: 25px auto;
```

```
line-height: 1.75;  
padding-left: 20px;  
}
```

```
.label_radio {  
text-align: center;  
}
```

```
td, tr, th {  
border: 1px solid black;  
}  
table {  
border-collapse: collapse;  
}
```

```
td, th {  
min-width: 50px;  
height: 21px;  
}  
.label_radio {  
text-align: center;  
}
```

```
#text_area_input {  
padding-left: 35%;  
float: left;  
}
```

```
svg:not(:root) {  
overflow: visible;  
}
```

This calculator produces an exponential regression equation based on values for a predictor variable and a response variable.

Simply enter a list of values for a predictor variable and a response variable in the boxes below, then click the Calculate" button:

Predictor values:

6, 7, 7, 8, 12, 14, 15, 16, 16, 19

Response values:

14, 15, 15, 17, 18, 18, 19, 24, 25, 29

Exponential Regression Equation:

$$y = 10.5340 * 1.0498^x$$

```
function calc() {

//get input data
var x = document.getElementById('x').value.split(',').map(Number);
var y_hold = document.getElementById('y').value.split(',').map(Number);
var y = ;

for(var i=0; i<y_hold.length; i++) {
y = Math.log10(y_hold);
}

//check that both lists are equal length
if (x.length - y.length == 0) {
document.getElementById('error_msg').innerHTML = "";

function linearRegression(y,x){
var lr = {};
var n = y.length;
var sum_x = 0;
var sum_y = 0;
var sum_xy = 0;
var sum_xx = 0;
var sum_yy = 0;

for (var i = 0; i < y.length; i++) {

sum_x += x;
sum_y += y;
sum_xy += (x*y);
sum_xx += (x*x);
sum_yy += (y*y);
}

lr = (n * sum_xy - sum_x * sum_y) / (n*sum_xx - sum_x * sum_x);
lr = (sum_y - lr.slope * sum_x)/n;
lr = Math.pow((n*sum_xy - sum_x*sum_y)/Math.sqrt((n*sum_xx-sum_x*sum_x)*(n*sum_yy-
```

```
sum_y*sum_y)),2);

return lr;
}
var lr = linearRegression(y, x);
var a = lr.slope;
var b = lr.intercept;

var first = Math.pow(10, b);
var second = Math.pow(10, a);

document.getElementById('a').innerHTML = second.toFixed(4);
document.getElementById('b').innerHTML = first.toFixed(4);
}

//output error message if boths lists are not equal
else {
document.getElementById('error_msg').innerHTML = 'The two lists must be of equal length.';
}

} //end calc function
```