

How can I add a regression equation to a plot in R?

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April 26, 2024

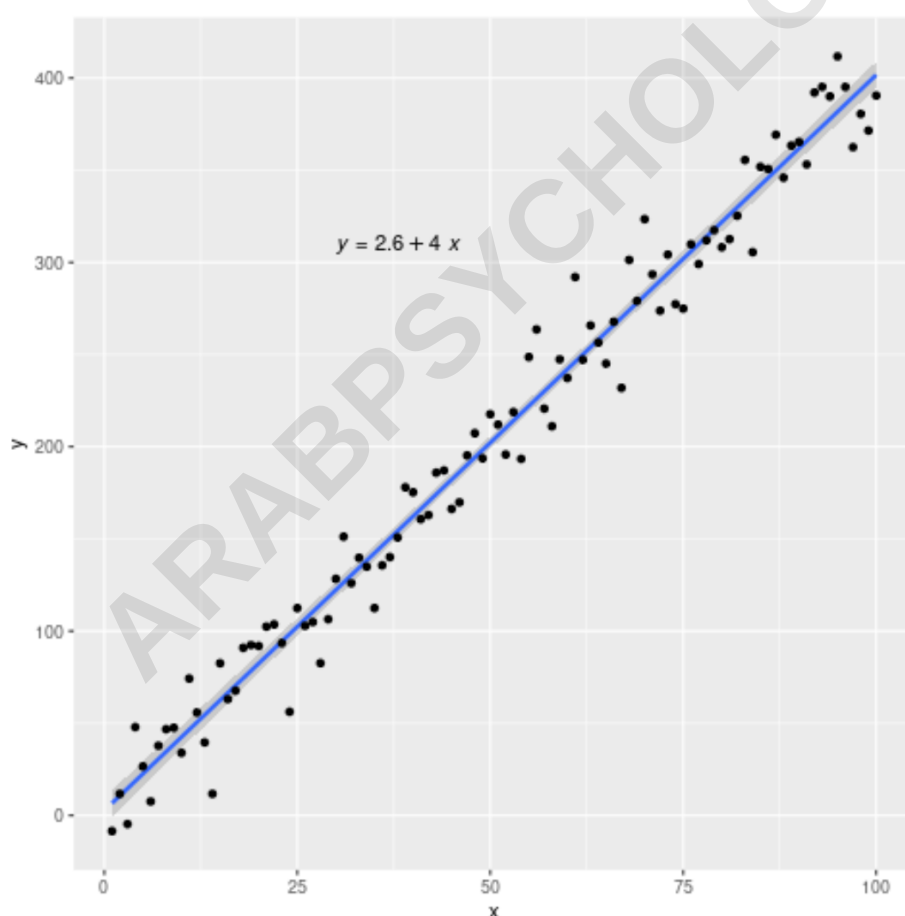
RECOMMENDED CITATION

stats writer (2024). *How can I add a regression equation to a plot in R?*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=139461>

Adding a regression equation to a plot in R allows for visual representation of the relationship between two variables and provides a mathematical model for future predictions. To do this, one can use the "abline" function and specify the slope and intercept of the regression line. This will add a straight line to the plot that best fits the data points. Additionally, one can use the "lm" function to calculate the regression equation and then use the "text" function to display the equation on the plot. These steps will provide a clear and concise way to showcase the regression equation on a plot in R.

Add a Regression Equation to a Plot in R

Often you may want to add a regression equation to a plot in R as follows:



Fortunately this is fairly easy to do using functions from

the **ggplot2** and **ggpubr** packages.

This tutorial provides a step-by-step example of how to use functions from these packages to add a regression equation to a plot in R.

Step 1: Create the Data

First, let's create some fake data to work with:

```
#make this example reproducible  
set.seed(1)
```

```
#create data frame
```

```
df <- data.frame(x = c(1:100))
```

```
df$y <- 4*df$x + rnorm(100, sd=20)
```

```
#view head of data frame
```

```
head(df)
```

```
x y
```

```
1 1 -8.529076
```

```
2 2 11.672866
```

```
3 3 -4.712572
```

```
4 4 47.905616
```

```
5 5 26.590155
```

6 6 7.590632

Step 2: Create the Plot with Regression Equation

Next, we'll use the following syntax to create a scatterplot with a fitted regression line and equation:

```
#load necessary libraries
```

```
library(ggplot2)
```

```
library(ggpubr)
```

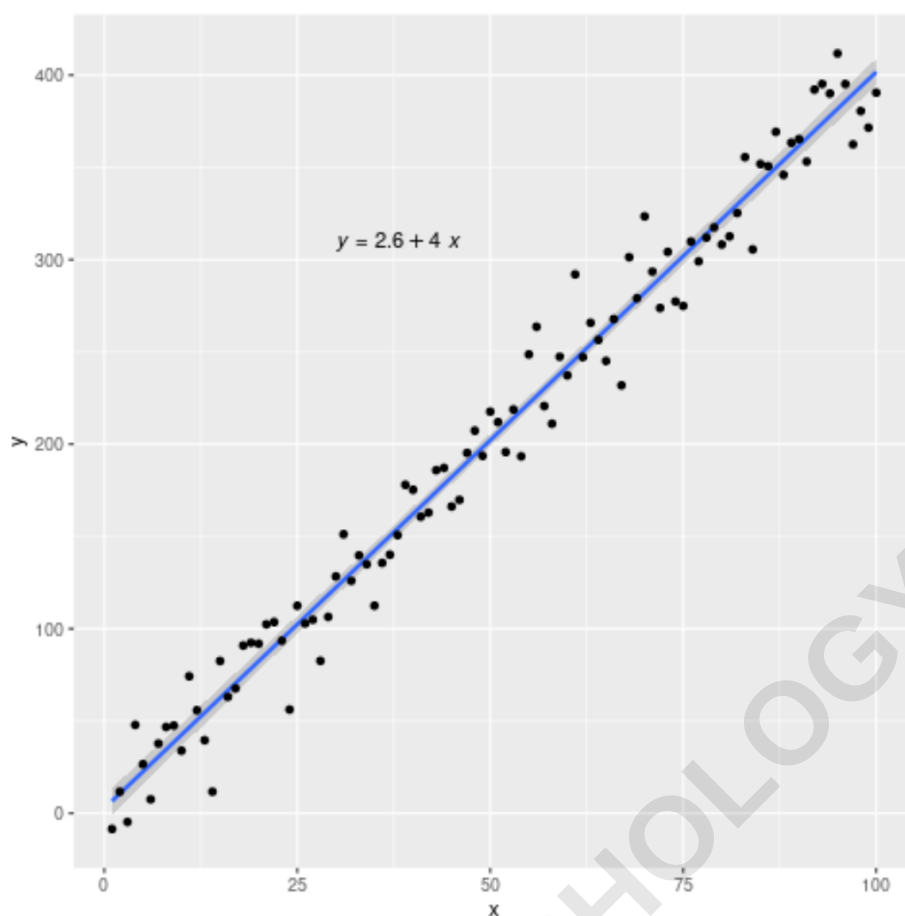
```
#create plot with regression line and regression equation
```

```
ggplot(data=df, aes(x=x, y=y)) +
```

```
geom_smooth(method="lm") +
```

```
geom_point() +
```

```
stat_regline_equation(label.x=30, label.y=310)
```



This tells us that the fitted regression equation is:

$$y = 2.6 + 4*(x)$$

Note that `label.x` and `label.y` specify the (x,y) coordinates for the regression equation to be displayed.

Step 3: Add R-Squared to the Plot (Optional)

You can also add the R-squared value of the regression model if you'd like using the following syntax:

#load necessary libraries

library(ggplot2)

library(ggpubr)

**#create plot with regression line, regression equation,
and R-squared**

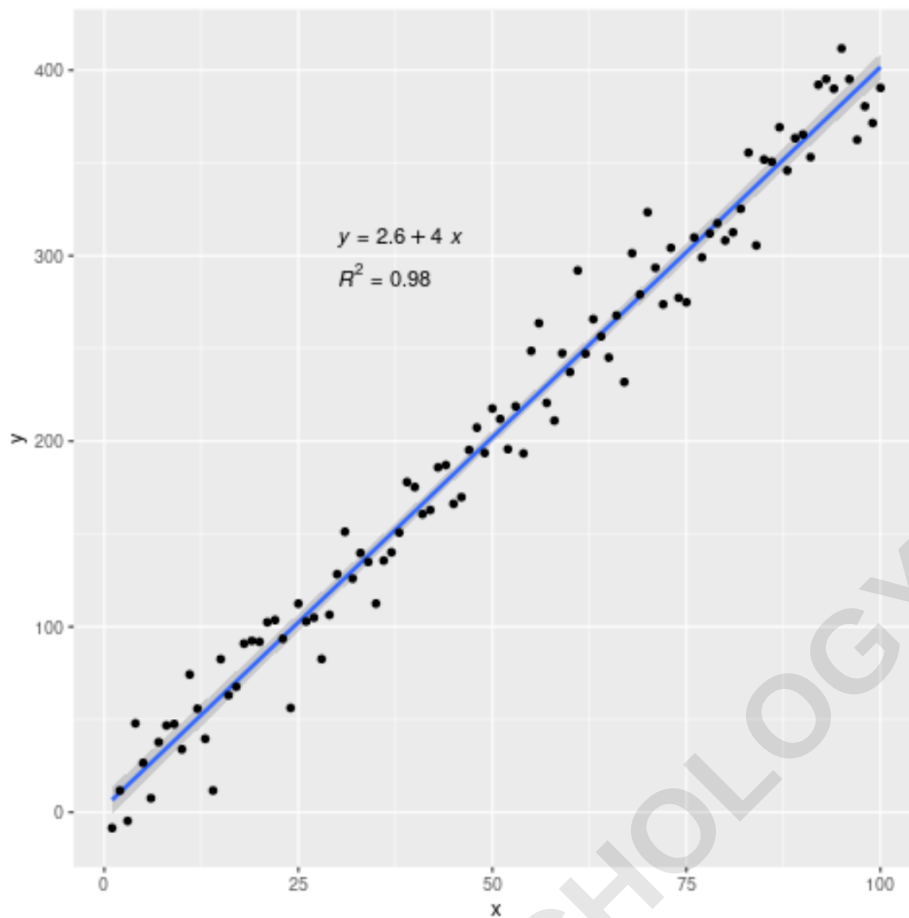
ggplot(data=df, aes(x=x, y=y)) +

geom_smooth(method="lm") +

geom_point() +

stat_regline_equation(label.x=30, label.y=310) +

stat_cor(aes(label=..rr.label..), label.x=30, label.y=290)



The for this model turns out to be 0.98.

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