Exploring Statistical Measures in R

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Exploring Statistical Measures in R: Average, Variance, and Standard Deviation Explained

https://www.geeksforgeeks.org/calculate-the-average-variance-and-standard-deviation-in-r-programming/

```
# Load the ggplot2 package
if (!require(ggplot2)) install.packages('ggplot2', dependencies = T)
```

```
## Cargando paquete requerido: ggplot2
```

```
library(ggplot2)
```

```
# Define a dataset
set.seed(123)  # for reproducibility
data <- rnorm(100, mean = 50, sd = 10)  # 100 random values, mean 50, sd 10

# Calculate mean, variance, and standard deviation
mean_value <- mean(data)
sd_value <- sd(data)

# Calculate the variance
variance_value <- var(data)

# Create the plot with variance annotation
ggplot(data.frame(data), aes(x = data)) +
  geom_density(fill = "lightblue", alpha = 0.5) +  # Density plot
  geom_vline(aes(xintercept = mean_value),
             color = "red", linetype = "dashed", linewidth = 1.2) +  # Mean line
  geom_vline(aes(xintercept = mean_value + sd_value),
             color = "green", linetype = "dotted", linewidth = 1) +  # SD line (right)
  geom_vline(aes(xintercept = mean_value - sd_value),
             color = "green", linetype = "dotted", linewidth = 1) +  # SD line (left)

  labs(title = "Visualization of Mean, Variance, and Standard Deviation",
       x = "Data Values", y = "Density") +

  theme_minimal() +

  annotate("text", x = mean_value, y = 0.03,
           label = paste("Mean =", round(mean_value, 2)), color = "red", vjust = -1) +
```

```
  annotate("text", x = mean_value + sd_value, y = 0.02,
           label = paste("Mean + SD =", round(mean_value + sd_value, 2)),
           color = "green", vjust = -1) +
  annotate("text", x = mean_value - sd_value, y = 0.02,
           label = paste("Mean - SD =", round(mean_value - sd_value, 2)),
           color = "green", vjust = -1) +
  annotate("text", x = mean_value + 20, y = 0.04,
           label = paste("Variance =", round(variance_value, 2)),
           color = "blue", vjust = -1)
```