

EXPERIMENT 4

CENTRAL TENDENCY AND DATA DISPERSION USING R

Code-

central tendency consists of the following measures -

1. arithmetic mean

2. geometric mean

3. harmonic mean

4. median

5. mode

1. ARITHMETIC MEAN

```
x <- c(3, 7, 5, 13, 20, 23, 39, 23, 40,  
      23, 14, 12, 56, 23, 29, 56, 37,  
      45, 1, 25, 8, 56, 56)
```

```
am = mean(x)
```

```
print("Arithmetic mean : ")
```

```
print(am)
```

2. GEOMETRIC MEAN

```
gm = (prod(x)^(1/length(x)))
```

```
print("geometric mean : ")
```

```
print(gm)
```

3. HARMONIC MEAN

```
hm = (1/mean(1/x))
```

```
print("harmonic mean : ")
```

```
print(hm)
```

4. MEDIAN

```
print("Median : ")
```

```
print(median(x))
```

5. MODE

generating frequency table using table() function

```
t <- table(x)
```

```
print(t)
```

finding mode

```
m <- names(t)[which(t == max(t))]
```

```
print("Mode : ")
```

```
print(m)
```

data dispersion ahowes the spread of data around a point.

1. variance

2. standard deviation

3. range

1. VARIANCE

```
print("Variance : ")
```

```
print(var(x))
```

2. STANDARD DEVIATION

```
print("Standard Deviation : ")
```

```
print(sqrt(var(x)))
```

3. RANGE

```
print("Range : ")
```

```
r = max(x) - min(x)
```

```
print(r)
```

#Output -

```
> source("c:\\Users\\SAH00\\Desktop\\R\\4_statistics\\4_statistics.R", encoding$
[1] "Arithmetic mean : "
[1] 26.69565
[1] "geometric mean : "
[1] 18.75014
[1] "harmonic mean : "
[1] 9.190478
[1] "Median : "
[1] 23
x
 1  3  5  7  8 12 13 14 20 23 25 29 37 39 40 45 56
1  1  1  1  1  1  1  1  1  4  1  1  1  1  1  1  4
[1] "Mode : "
[1] "23" "56"
[1] "Variance : "
[1] 332.1304
[1] "Standard Deviation : "
[1] 18.22445
[1] "Range : "
[1] 55
> █
```