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Statistics Package Exercise: Interpreting The Five Number Summary

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Statistics Package Exercise: Interpreting The Five Number Summary

Learning Objective: Generate and interpret several different graphical displays of the distribution of a quantitative variable (histogram, stemplot, boxplot).

Learning Objective: Summarize and describe the distribution of a quantitative variable in context: a) describe the overall pattern, b) describe striking deviations from the pattern.

In this activity, we will use the Best Actor Oscar winners (1970-2013) to:

- learn how to use a statistics package to produce the numerical measures, or "descriptive statistics" of a distribution.

- get some information about the distribution from its five-number summary.

Click here 🔗 to see the entire dataset.

- | **R** | **StatCrunch** | **TI Calculator** | **Minitab Instructions** | **Excel Instructions** |

R Instructions

To open R with the dataset preloaded, right-click here and choose "Save Target As" to download the file to your computer. Then find the downloaded file and double-click it to open it in R.

The data have been loaded into the data frame

```
actor_age
```

. Enter the command

```
actor_age
```

to see the data. The only variable (column title) in the data frame

```
actor_age
```

is

```
Age
```

.

The following command will show you the five-number summary for the actors' age data and the mean value of the data as well:

```
summary(actor_age$Age)
```

To get specific descriptive statistics from the data set consider the following commands:

For the Mean:

```
mean(actor_age$Age)
```

For the Standard Deviation:

```
sd(actor_age$Age)
```

For the Variance:

```
var(actor_age$Age)
```

For the Median:

```
median(actor_age$Age
```

For the Inter-quartile range:

```
IQR(actor_age$Age)
```

For the Minimum:

```
min(actor_age$Age)
```

For the Maximum:

```
max(actor_age$Age)
```

For the Sample Size (n):

```
length(actor_age$Age)
```

For the First Quartile (25th percentile, Q1):

```
quantile(actor_age$Age, 0.25)
```

For the Third Quartile (75th percentile, Q3):

```
quantile(actor_age$Age, 0.75)
```

Learn By Doing (1/1 point)

Getting information from the output: a. How many observations are in this data set? b. What is the mean age of the actors who won the Oscar? c. What is the five-number summary of the distribution?

Your Answer:

```
44 observations
mean = 44.98
min = 29
Q1 = 38
median = 43.5
Q3 = 50.25
```

Our Answer:

RStatCrunchTI CalculatorMinitabExcel R a. There are n = 44 observations in the data set (representing the age of the Best Actor Oscar winners of the 44 years from 1970 through 2013). b. Mean = 44.98 c. The five-number summary is: min = 29, Q1 = 38, M = 43.5, Q3 = 50.5, Max = 76 StatCrunch a. There are n = 44 observations in the data set (representing the age of the Best Actor Oscar winners of the 44 years from 1970 through 2013). b. Mean = 44.98 c. The five-number summary is: min = 29, Q1 = 38, M = 43.5, Q3 = 50.5, Max = 76 TIa. There are n = 44 observations in the dataset (representing the age of the Best Actor Oscar winners of the 44 years from 1970 to 2013). b. Mean = 44.98 c. The five-number summary is: min = 29, Q1 = 38, M = 43.5, Q3 = 50.5, Max = 76 Minitab a. There are n = 44 observations in the dataset (representing the age of the Best Actor Oscar winners of the 44 years from 1970 to 2013). b. Mean = 44.98 c. The five-number summary is: min = 29, Q1 = 38, M = 43.5, Q3 = 50.5, Max = 76 Excel a. There are n = 44 observations in the dataset (representing the age of the Best Actor Oscar winners of the 32 years from 1970 to 2013). b. Mean = 44.98 c. The five-number summary is: min = 29, Q1 = 38, M = 43.5, Q3 = 50.5, Max = 76

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Learn By Doing (1/1 point)

Get information from the five-number summary: a. Half of the actors won the Oscar before what age? b. What is the range covered by all the actors' ages? c. What is the range covered by the middle 50% of the ages?

Your Answer:

a. before 43.5 years
b. range of 47
c. IQR is 12.25

Our Answer:

RStatCrunchTI CalculatorMinitabExcel R a. Half the actors won the Oscar before age 43.5 (the median). b. The range covered by all the ages is: Range = Max - min = 76 - 29 = 47. c. The range covered by the middle 50% of the ages is: IQR = Q3 - Q1 = 50.5 - 38 = 12.5. StatCrunch a. Half the actors won the Oscar before age 43.5 (the median). b. The range covered by all the ages is: Range = Max - min = 76 - 29 = 47. c. The range covered by the middle 50% of the ages is: IQR = Q3 - Q1 = 50.5 - 38 = 12.5. TI Calculator a. Half the actors won the Oscar before age 43.5 (the median). b. The range covered by all the ages is: Range = Max - min = 76 - 29 = 47. c. The range covered by the middle 50% of the ages is: IQR = Q3 - Q1 = 50.5 - 38 = 12.5.Minitab a. Half the actors won the Oscar before age 43.5 (the median). b. The range covered by all the ages is: Range = Max - min = 76 - 29 = 47. c. The range covered by the middle 50% of the ages is: IQR = Q3 - Q1 = 50.5 - 38 = 12.5.Excel a. Half the actors won the Oscar before age 43.5 (the median). b. The range covered by all the ages is: Range = Max - min = 76 - 29 = 47. c. The range covered by the middle 50% of the ages is: IQR = Q3 - Q1 = 50.5 - 38 = 12.5.

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