

Inference Concepts

R Handout

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Background

The [Survey of Study Habits and Attitudes \(SSHA\)](#) was a psychological test that measures the motivation, attitudes, and study habits of college students. Scores range from 0 to 200 and follow (approximately) a normal distribution, with a mean of 110 and a standard deviation of 20. The survey was given to 40 “non-traditional” students to test the hypothesis that they had stronger study habits and greater motivation for school work.

The results of the study are in [SSHA.csv](#). Use these data to test the hypothesis at the 5% level.

Getting the Data

```
> library(NCStats)
> setwd("C:/aaaWork/Web/GitHub/NCMTH107/modules/1_Sample_Z")
> d <- read.csv("SSHA.csv")
> str(d)
```

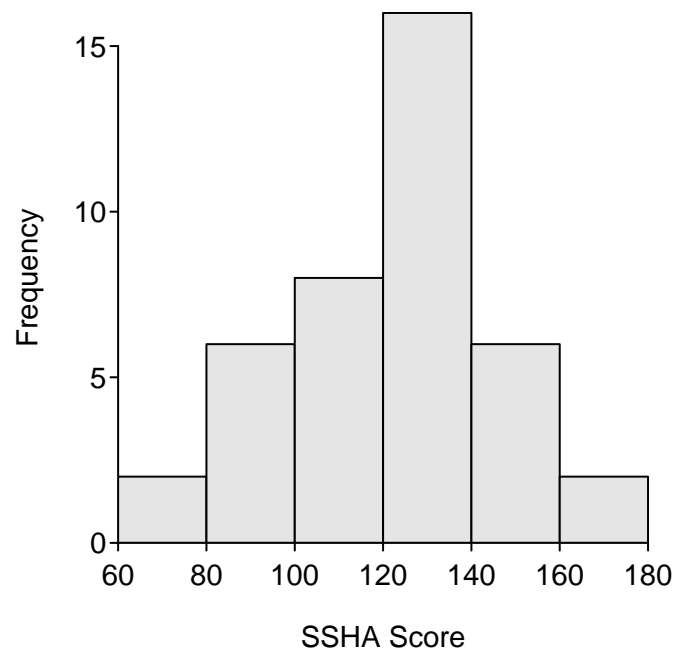
```
'data.frame':  40 obs. of  1 variable:
 $ score: int  113 131 108 72 124 129 125 100 141 117 ...
```

Quick EDA

```
> Summarize(~score, data=d, digits=1)
```

n	nvalid	mean	sd	min	Q1	median	Q3	max	percZero
40.0	40.0	121.1	24.8	72.0	106.8	125.0	138.0	180.0	0.0

```
> hist(~score, data=d, xlab="SSHA Score")
```



1-Sample Z-test

```
> ( z1 <- z.test(d$score,sd=20,mu=110,alt="greater",conf.level=0.95) )
```

```
One Sample z-test with d$score
z = 3.5101, n = 40.000, Std. Dev. = 20.000, Std. Dev. of the sample mean =
3.162, p-value = 0.0002239
alternative hypothesis: true mean is greater than 110
95 percent confidence interval:
 115.8985      Inf
sample estimates:
mean of d$score
      121.1
```

```
> plot(z1)
```

