Noise Difference Between Sites

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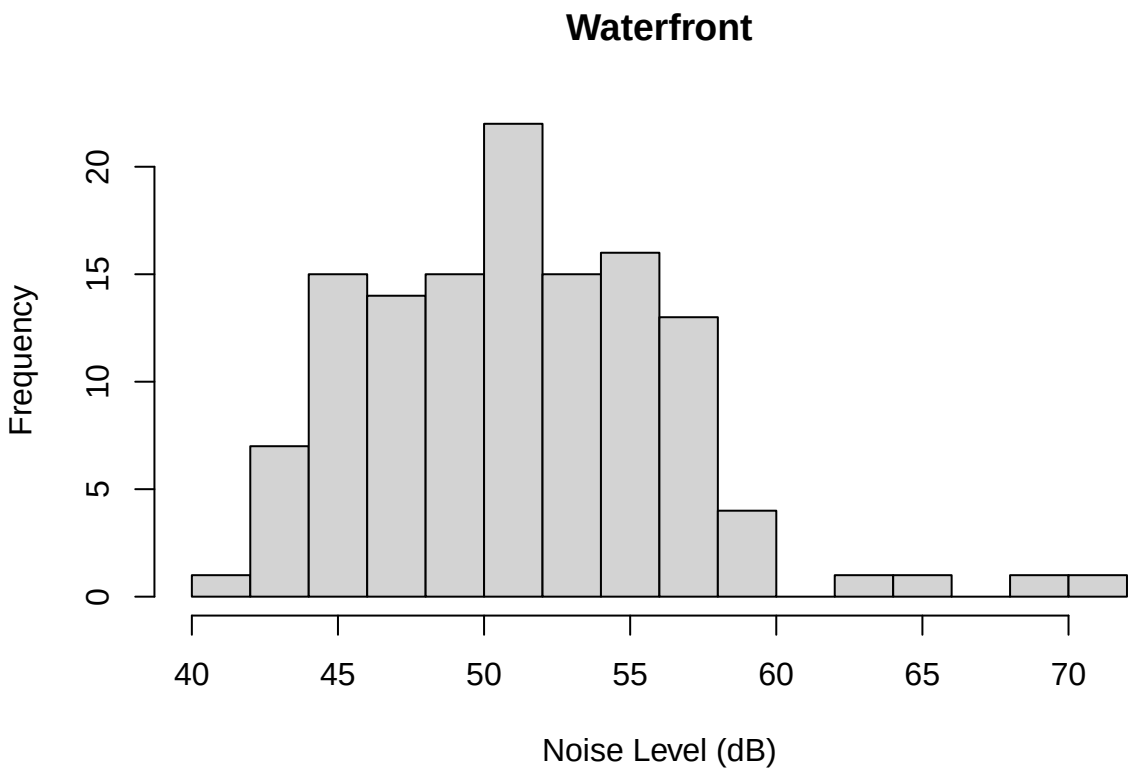
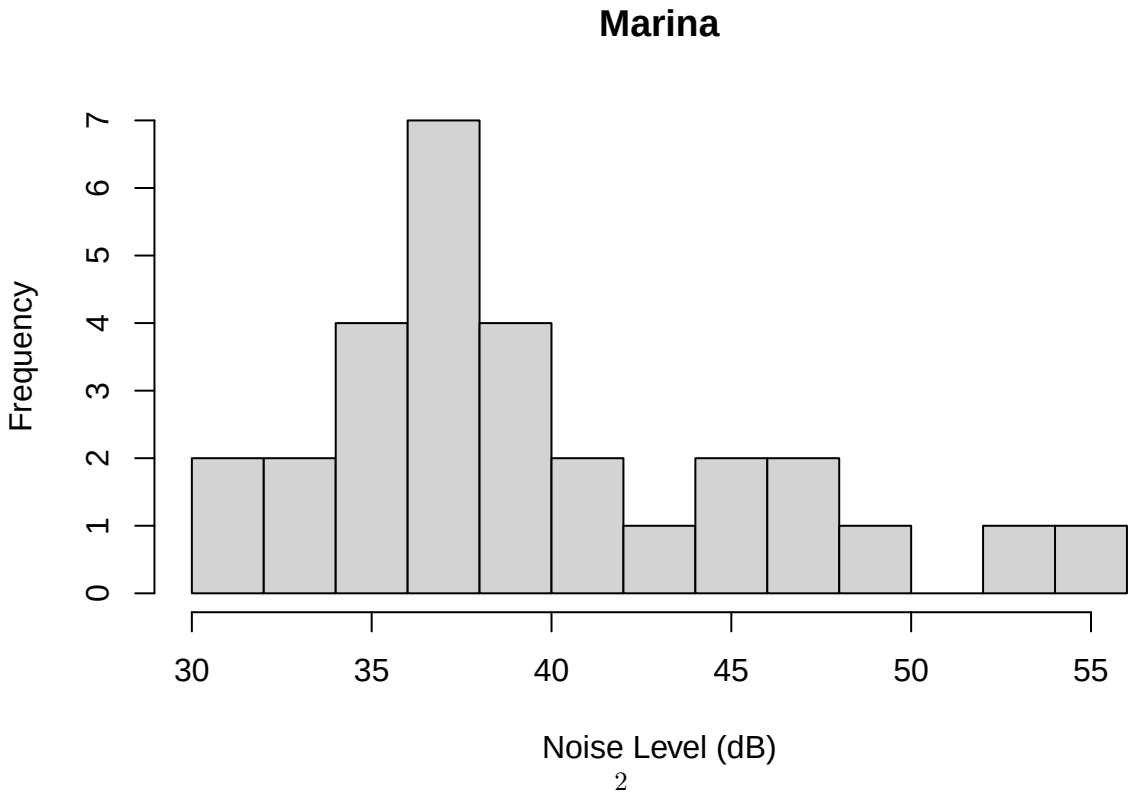
In this markdown I will:

1. Check the assumptions of a t-test.
2. Run a wilcox test on the noise levels between sites.
3. Graph the differences in noise levels between sites.

Check t-test assumptions

Are the noise levels normal within sites?





The marina site has nonnormality in noise levels.

Are the noise level variences equal between sites?

```
full.data<-read.csv("../data/full.data.csv")

# waterfront
var(full.data$noise[full.data$site == "waterfront"])
```

```
## [1] 27.20042
```

```
# marina
var(full.data$noise[full.data$site == "marina"])
```

```
## [1] 37.49616
```

Variences are not equal. Therefore we need to run a wilcox test (U-test).

Check Wilcox Test

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  noise by site
## W = 324.5, p-value = 5.513e-12
## alternative hypothesis: true location shift is not equal to 0
```

```
## [1] 5.513251e-12
```

The noise levels between sites are significantly different.

Check average and standard devition noise levels within sites

```
new.w.data<-read.csv("../data/new.w.data.csv")
m.data<-read.csv("../data/m.data.csv")

# waterfront
mean(new.w.data$noise)
```

```
## [1] 51.21548
```

```
sd(new.w.data$noise)
```

```
## [1] 5.215402
```

```
# marina
mean(m.data$noise)
```

```
## [1] 39.74828
```

```
sd(m.data$noise)
```

```
## [1] 6.123411
```

Graph these differences in a violin plot