

Comparison of Noise Readings - March 2020

Stephen Howe

3/14/2020

Sound Level Readings - March 10 - 13, 2020

The following plots show the sound level readings for the following nights:

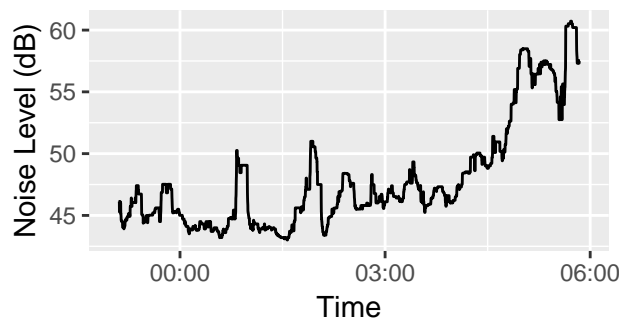
- Monday (3/9) - Tuesday (3/10)
- Tuesday (3/10) - Wednesday (3/11)
- Wednesday (3/11) - Thursday (3/12)
- Thursday (3/12) - Friday (3/13)

All readings are for the hours of 11PM to 6AM. A decibel reading is logged every 5 seconds and the L10 reading is calculated for a 10 minute moving window. The sound meter was placed inside a closed window in unit 7A. All measurements in this document have been taken on the same meter placed in the same position. The meter is a REED Instruments SD-4023 Sound Level Meter, Datalogger. It is Type 2 meter.

Line Plots of L10

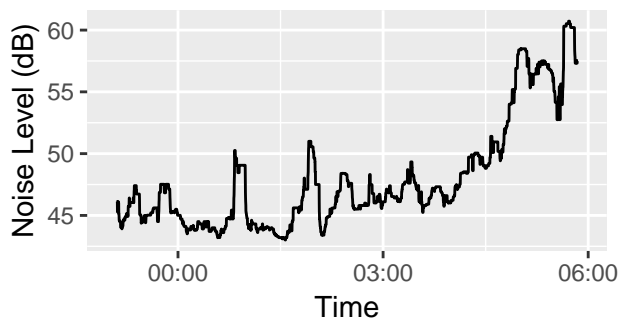
L10 Measurement

Night of 3/9/2020 – 3/10/2020



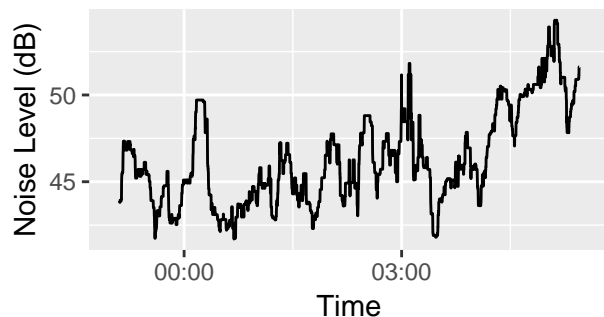
L10 Measurement

Night of 3/10/2020 – 3/11/2020



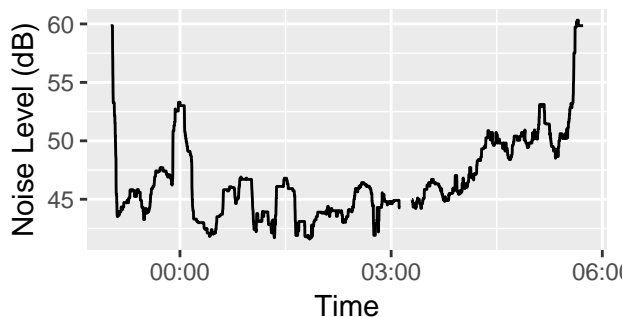
L10 Measurement

Night of 3/11/2020 – 3/12/2020



L10 Measurement

Night of 3/12/2020 – 3/13/2020



Comparison to Earlier Weeks

We can compare these readings to the same set of days in previous weeks. In the following plots we can look at both box plots and density plots for the sound readings from this week (Monday night, Tuesday night, Wednesday night, Thursday night) and the same nights for the week of February 3, February 17, and February 24.

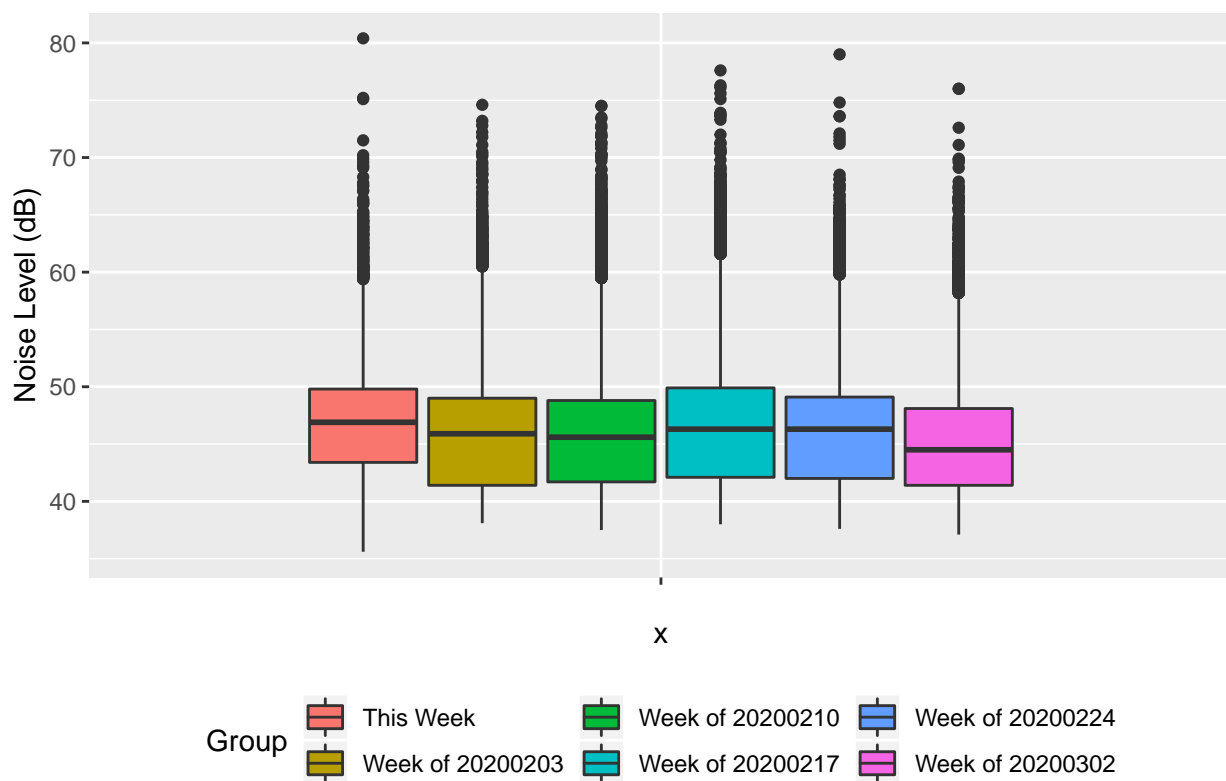
Boxplot

The boxplot is interpreted in the following way:

- the heavy black line in the middle of the color box is the median value. 50% of all measurements fall on either side of this line.
- the bottom of the box is the value for the 25% percentile
- the top of the box is the value for the 75% percental
- the bottom of the line extending downwards from the box is the minimum value
- the top of the line extending upwards from the box is the maximum value
- the dots above that line are outlier readings

Looking at the boxplot we can see that the median value is pretty consistent across all four weeks.

Boxplot of Noise Readings

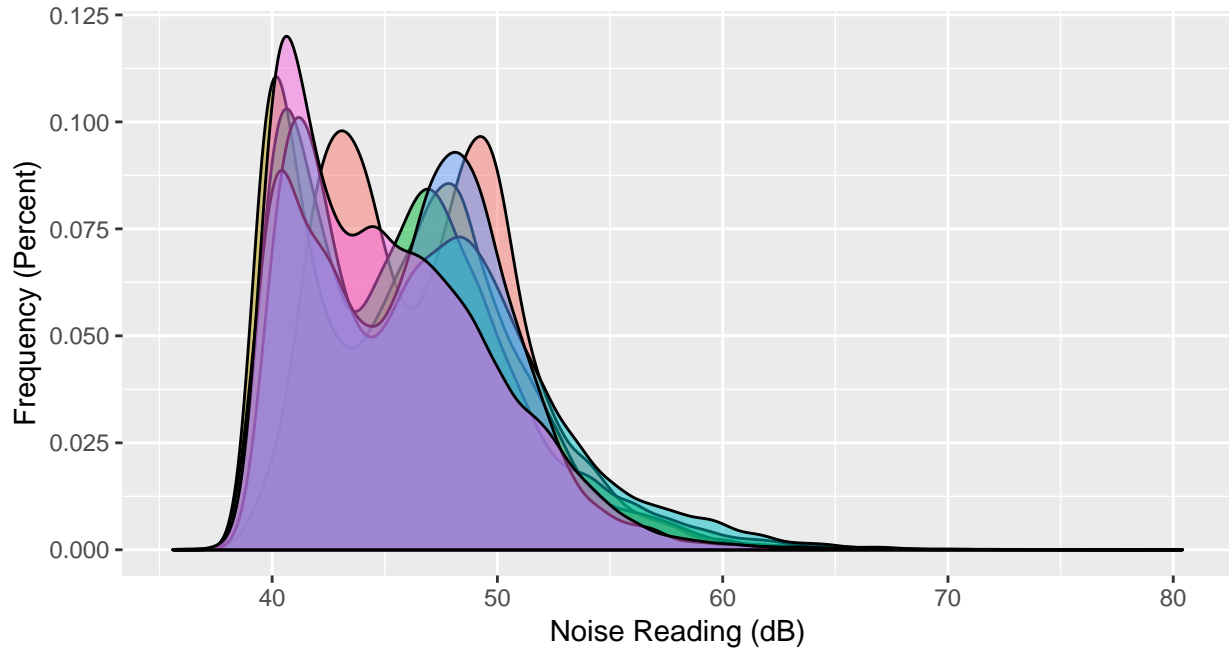


Density Plot

The density plot shows the percentage of readings at a given decibel level. If we look at the density plot, we can see that the shape of the distribution is roughly the same for each of the weeks.

This week is, if anything, is shifted slightly to the right (there are more louder readings this week).

Distribution of Noise Readings



L10

One final measurement for comparison is the L10 level (the point at which 90% of all the readings fall below) for each week. The L10 level for each week is:

- This Week: 52.3
- Week of 2/3: 51.9
- Week of 2/10: 52.2
- Week of 2/17: 53.3
- Week of 2/24: 51.4
- Week of 3/2: 51.4