

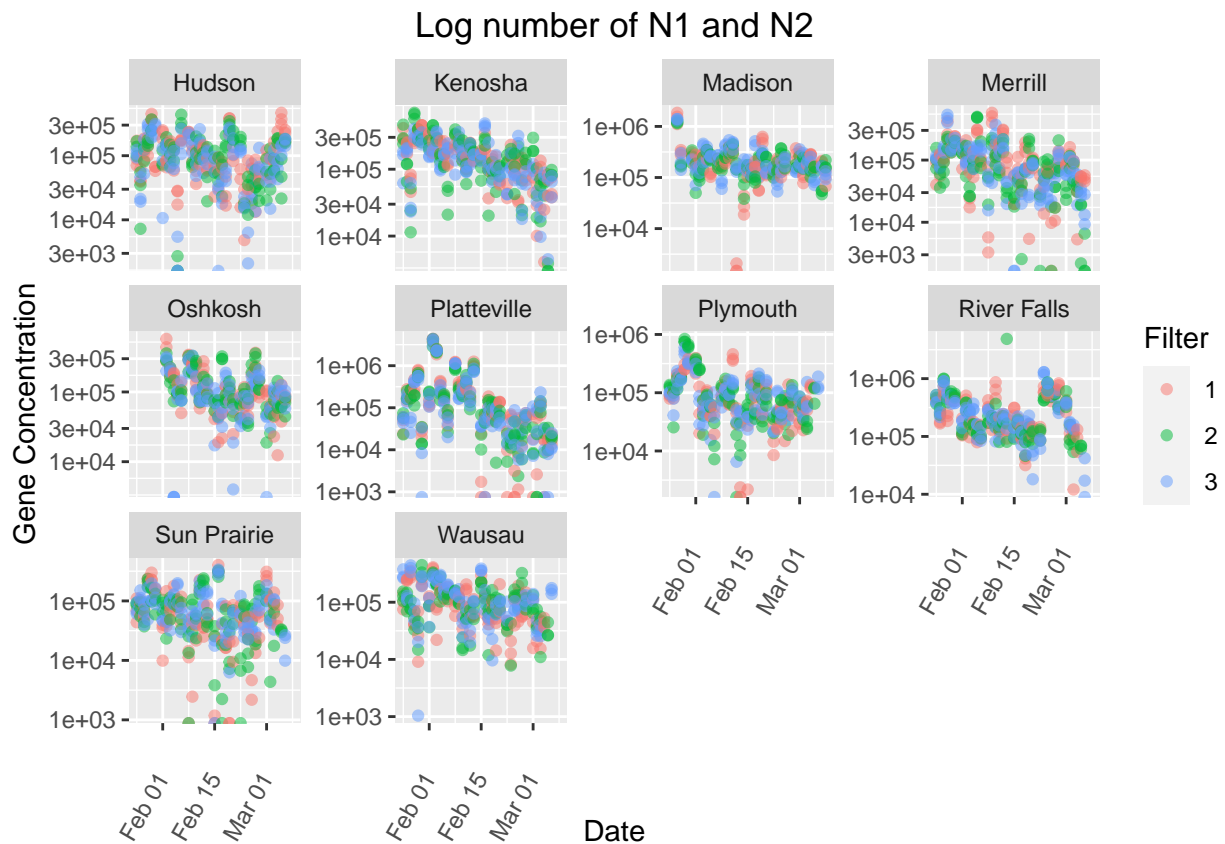
# High Frequency Wastewater Data

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## High Frequency Data Source

This vignette covers the high frequency data collected by the Wisconsin State Lab of Hygiene. This Wastewater data covers 6 weeks of 9 measurements per day, 6 days a week. This has 17 columns where 4 categorical variables and 13 measurement columns which analyse 6 signals.

The data is broken down by site, date, filter and well. Site is where the sample was collected from a range of 10 locations. Filter and well are what level of replicates it is. Filter is the high level category representing the different collections. Well contains the info about what technical batch it was. The numbering of the categories is arbitrary from day to day.



Otherwise the signals measured were N1 and N2, different genes of Covid-19, PMMOV, BCoV, HF183, and CrP, which are intended to function as normalizers. These signals can have a couple of different companion columns. The Ct version is what the machine measured which was the number of spins to detect the genes. This is an exponential decay transformation to the Base column. The other extra column is the LOD which says if the measurement was below the lab's level of detection. This might mean the exact number is less reliable.

| site   | date       | Filter | Well | N1     | N1LOD | N2     | N2LODPMMOV | BCoV    | HF183 | CrP                 |
|--------|------------|--------|------|--------|-------|--------|------------|---------|-------|---------------------|
| Hudson | 2021-01-25 | 1      | 1    | 70268  | FALSE | 40121  | TRUE       | 8335368 | 1.92  | 236887243 119023953 |
| Hudson | 2021-01-25 | 1      | 2    | 171547 | FALSE | 67953  | FALSE      | 8756036 | 2.06  | 210693707 99677418  |
| Hudson | 2021-01-25 | 1      | 3    | 88856  | FALSE | 54756  | TRUE       | 7268880 | 1.95  | 162485283 90503607  |
| Hudson | 2021-01-25 | 2      | 1    | 138137 | FALSE | 110372 | FALSE      | 6945237 | 4.15  | 265156508 98203103  |
| Hudson | 2021-01-25 | 2      | 2    | 168132 | FALSE | 107241 | FALSE      | 6917604 | 4.76  | 203828374 91220128  |
| Hudson | 2021-01-25 | 2      | 3    | 98634  | FALSE | 67862  | FALSE      | 7103485 | 6.10  | 296482397 97912594  |

We used this data set in some analysis [here](#)