DHS analysis comparing the base analysis to outlier Filtering with loess baseline

```
library(DSIWastewater)
data(wastewater_data, package = "DSIWastewater")
workset4_data <- buildWorkSheet4(wastewater_data)</pre>
#Only show Site with more than 180 measurements for vignette for brevity
workset4_data <- workset4_data[workset4_data$n >= 180,]
workset4_Smooth_data <- do.call(rbind,</pre>
                                lapply(
                                  split(workset4_data,~WWTP),
                                  LoessSmoothMod))
filter_outliers <- function(df, n){</pre>
  df_data <- computeJumps(df)</pre>
  ranked_data <- rankJumps(df_data)</pre>
  ranked_quantile_data <- computeRankQuantiles(ranked_data)</pre>
  classied_data <- flagOutliers(ranked_quantile_data, n)</pre>
  created_data <- RemoveOutliers(classied_data)</pre>
created_data <- filter_outliers(workset4_Smooth_data, 9)</pre>
reg_estimates_data <- buildRegressionEstimateTable(created_data,</pre>
                                 Run0n = c("sars_cov2_adj_load_log10",
                                  "sars_adj_log10_Filtered",
                                  "Loess"))
head(reg_estimates_data)
## # A tibble: 6 × 9
                                       days_elapsed lmreg_n lmreg_slope
                                                                                lmreg_sig
                    Method date
     WWTP
                    <dbl>
## 1 Green Bay MSD Loess 2020-09-06 14 5
## 2 Green Bay MSD Loess 2020-09-07 14 5
                                                                    0.0211 0.0000000256
## 2 Green Bay MSD Loess 2020-09-07
                                                                    0.0212 0.000000000977
## 3 Green Bay MSD Loess 2020-09-13
                                                                    0.0210 0.000000510
## 4 Green Bay MSD Loess 2020-09-14
                                                                    0.0208 0.000000516
                                                  14
## 5 Green Bay MSD Loess 2020-09-20
                                                  14
                                                                    0.0212 0.00000529
## 6 Green Bay MSD Loess 2020-09-21
                                                            5
                                                  14
                                                                    0.0214 0.00000557
## # ... with 2 more variables: modeled_percentchange <dbl>, Catagory <fct>
createConfMatrix_Plot(reg_estimates_data,
                        "sars_cov2_adj_load_log10",
createConfMatrix_Plot(reg_estimates_data,
                        "Loess",
                        "sars_adj_log10_Filtered")
createMethodCompareBar_Plot(reg_estimates_data)
createDHSMethod_Plot(reg_estimates_data, created_data,
                  PointVal = c( "sars_cov2_adj_load_log10",
                                 "sars_adj_log10_Filtered"),
                  LineVal = "Loess")
                                                                                Hudson WWTF
                          Green Bay MSD
                                                                                                                                         Kenosha WWTF
     10.0 -
                                                           10.0 -
                                                                                                                    10.0 -
     7.5
                                                                                                                     7.5 -
      5.0 -
                                                           5.0
                                                                                                                     5.0 -
      2.5 -
     0.0
     10.0 -
     7.5 -
     5.0 -
     2.5 -
     0.0
     10.0 -
     7.5 -
     5.0 -
  sars_cov2_adj_load_log10
                                            Jan 22
                                                                                                 Jan 22
                                                                      Jan 21
                                                                                    Jul 21
                                                                                                                                Jan 21
                                                                                                                                              Jul 21
                                                                                                                                                           Jan 22
                  Jan 21
                               Jul 21
                              date
                                                                                    date
                                                                                                                                              date
                                                                          Milwaukee MSD Jones Island
                                                                                                                                    Milwaukee MSD South Shore
     10.0 -
                                                           10.0 -
     5.0 -
                                                           5.0 -
                                                                                                                     5.0 -
                                                                                                                                                                              Catagory
     2.5 -
                                                                                                                                                                                   major decrease
                                                                                                                                                                                   moderate decrease
                                                                                                                                                                                   fluctuating
      5.0 -
                                                                                                                     5.0 -
                                                                                                                                                                                   no change
                                                                                                                                                                                   moderate increase
                                                                                                                                                                                   major increase
                                                                                                                                                                              colour
  sars_cov2_adj_load_log10
                                                                                                                                                                               Loess
                                                                                                                                                                               sars_adj_log10_Filtered
                                                                                                                                                                               sars_cov2_adj_load_log10
                                           Jan 22
                                                                                                  Jan 22
                                                                                                                                 Jan 21
                                                                                                                                                           Jan 22
                 Jan 21
                              Jul 21
                                                                        Jan 21
                              date
                                                                                     date
                                                                                                                                              date
                          Oshkosh WWTP
                                                                           Wausau Water Works WWTF
     10.0 -
     7.5 -
                                                           5.0
     5.0 -
      2.5 -
     5.0 -
     2.5
  _adj_load_log10
```