Introduction

Introduction

These instructions are aimed at people familiar with R and familiar with TCGA/GDC platforms and data types. They are intended to introduce the reader to producing the given assessment. These instructions will only rarely, if ever, touch on the appropriateness of the assessment algorithm or interpretation of output. See MBatch_01_InstallLinux for instructions on downloading test data.

Algorithm

Boxplot_AllSamplesRLE_Structures is a function used to perform batch effects assessments using the boxplots on all samples using RLE (run length encoding).

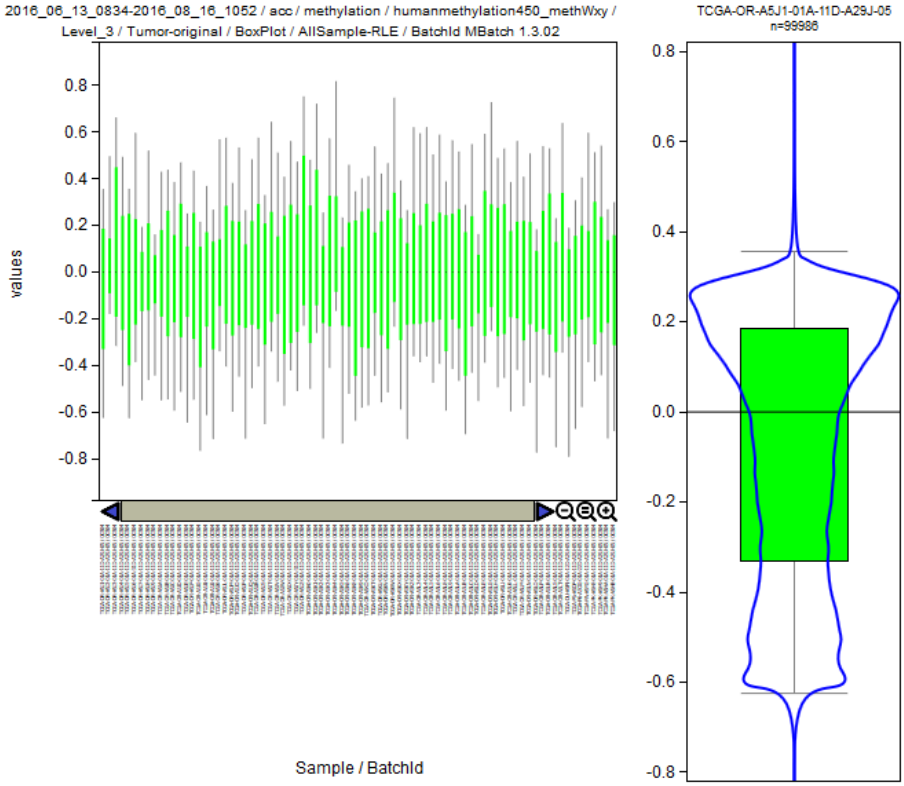
Output

The primary output method for MBatch is to view results in the Batch Effects Website, described elsewhere. The PNG files are rough versions of the website output.

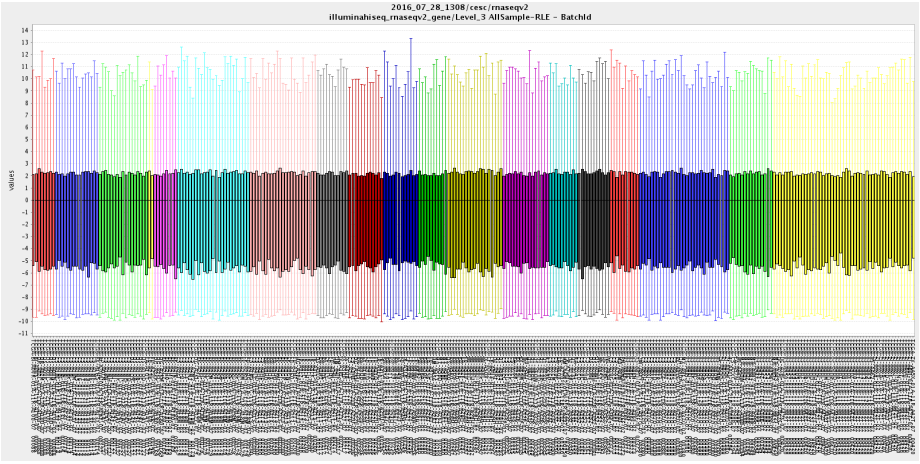
Graphical output is a set of boxplots where each boxplot (also called a box and whisper plot) represent a single sample. For datasets with many samples, the static PNG may be so dense as to be unusable.

The All Samples Boxplots plot the value for each feature (genes or probes) for a sample, with the samples grouped and colored by batch. So the vertical axis is based on the values of the original data and the points plotted are features. The actual meaning of the data used, such as expression, read counts, and the like, will vary based on the data being processed.

Here is an example of a smallish dynamic boxplot. (See Batch Effects Viewer documentation for more details.)



Here is an example of the static plot for a medium-sized dataset.



Usage

Boxplot_AllSamplesRLE_Structures(theData, theTitle, theOutputPath, theBatchTypeAndValuePairsToRemove, theBatchTypeAndValuePairsToKeep, theMaxGeneCount=20000)

Arguments

##theData An instance of BEA_DATA.

BEA_DATA objects can be created by calls of the form new("BEA_DATA", theData, theBatches, theCovariates). If you have no covariate data, use an empty data.frame created with data.frame()

mData: Object of class "matrix" A matrix where the colnames are sample ids and the rownames are gene equivalents. All names should be strings, not factors.

mBatches: Object of class "data.frame" A data.frame where the column "names" are batch types. The first batch "type" is "Sample". All names and values should be strings, not factors or numeric.

mCovariates: Object of class "data.frame" A data.frame where the column "names" are covariate types. The first covariate "type" is "Sample". All names and values should be strings, not factors or numeric.

##theTitle A string title to use in PNG files.

##theOutputPath String giving directory in which to place output PNG files.

##theBatchTypeAndValuePairsToRemove A list of vectors containing the batch type (or * for all types) and the value to remove. list() indicates none while NULL will cause an error.

##theBatchTypeAndValuePairsToKeep A list of vectors containing the batch type (or * for all types) and a vector of the the value(s) to keep. list() indicates none while NULL will cause an error.

##theMaxGeneCount
Integer giving maximum number of features (genes) to keep. Default is 20000. 0 means keep all.

Example Call

The following code is adapted from the tests/Boxplot_AllSamplesRLE_Structures file. Data used is from the testing data as per the MBatch_01_InstallLinux document. In the future, we plan to make the output from MBatch more user friendly, but currently, this produces the following output at the command line.

This output can generally be skipped as very long and generally obscure. After the output is an explanation of files and directories created.

```
{
  library(MBatch)

  inputDir <- getTestInputDir()
  outputDir <- getTestOutputDir()
  compareDir <- getTestCompareDir()

  # set the paths
  theGeneFile=file.path(inputDir, "matrix_data-Tumor.tsv")
  theBatchFile=file.path(inputDir, "batches-Tumor.tsv")
  theOutputDir=file.path(outputDir, "Boxplot_AllSamplesRLE_Structures")
  theRandomSeed=314

  # make sure the output dir exists and is empty
  unlink(theOutputDir, recursive=TRUE)
  dir.create(theOutputDir, showWarnings=FALSE, recursive=TRUE)

  # load the data and reduce the amount of data to reduce run time
  myData <- mbatchLoadFiles(theGeneFile, theBatchFile)
  myData@mData <- mbatchTrimData(myData@mData, 100000)

  # here, we take most defaults
  Boxplot_AllSamplesRLE_Structures(myData, "Disease/Data Type/Platform/Data Level", theOutpu
}
```

```
## 2020 11 18 16:18:32.138 DEBUG ab7c64738d52 Changing LC_COLLATE to C for duration of run
## 2020 11 18 16:18:32.138 INFO ab7c64738d52 \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
## 2020 11 18 16:18:32.138 INFO ab7c64738d52 Starting mbatchLoadFiles
## 2020 11 18 16:18:32.139 INFO ab7c64738d52 MBatch Version: BEA_VERSION_TIMESTAMP
## 2020 11 18 16:18:32.139 INFO ab7c64738d52 read batch file= /builds/BatchEffects_clean/Bat
## 2020 11 18 16:18:32.140 INFO ab7c64738d52 read gene file= /builds/BatchEffects_clean/Batc
## 2020 11 18 16:18:34.180 INFO ab7c64738d52 filter samples in batches using gene samples
## 2020 11 18 16:18:34.181 INFO ab7c64738d52 sort batches by gene file samples
## 2020 11 18 16:18:34.276 INFO ab7c64738d52 Finishing mbatchLoadFiles
## 2020 11 18 16:18:34.277 INFO ab7c64738d52 ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
## 2020 11 18 16:18:34.277 DEBUG ab7c64738d52 Changing LC_COLLATE to C for duration of run
## 2020 11 18 16:18:34.277 INFO ab7c64738d52 \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
## 2020 11 18 16:18:34.277 INFO ab7c64738d52 mbatchTrimData Starting
## 2020 11 18 16:18:34.277 INFO ab7c64738d52 MBatch Version: BEA_VERSION_TIMESTAMP
## 2020 11 18 16:18:41.863 INFO ab7c64738d52 mbatchTrimData theMaxSize= 1e+05
## 2020 11 18 16:18:41.863 INFO ab7c64738d52 mbatchTrimData ncol(theMatrix)= 80
## 2020 11 18 16:18:41.864 INFO ab7c64738d52 mbatchTrimData nrow(theMatrix)= 1250
## 2020 11 18 16:18:41.864 INFO ab7c64738d52 mbatchTrimData Finishing
## 2020 11 18 16:18:41.864 INFO ab7c64738d52 ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
## 2020 11 18 16:18:41.865 DEBUG ab7c64738d52 Changing LC_COLLATE to C for duration of run
## 2020 11 18 16:18:41.865 INFO ab7c64738d52 \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
```

```
## 2020 11 18 16:18:41.866 INFO ab7c64738d52 mbatchFilterData Starting
## 2020 11 18 16:18:41.866 INFO ab7c64738d52 MBatch Version: BEA_VERSION_TIMESTAMP
## 2020 11 18 16:18:41.866 DEBUG ab7c64738d52 rows pre filter  1250
## 2020 11 18 16:18:42.076 DEBUG ab7c64738d52 rows post filter  1250
## 2020 11 18 16:18:42.077 DEBUG ab7c64738d52 mbatchFilterData Prefilter, gene data had  125
## 2020 11 18 16:18:42.077 DEBUG ab7c64738d52 mbatchFilterData Prefilter, batch data had  80
## 2020 11 18 16:18:42.078 INFO ab7c64738d52 mbatchFilterData Finishing
## 2020 11 18 16:18:42.078 INFO ab7c64738d52 ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
## 2020 11 18 16:18:42.078 DEBUG ab7c64738d52 Changing LC_COLLATE to C for duration of run
## 2020 11 18 16:18:42.078 INFO ab7c64738d52 \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
## 2020 11 18 16:18:42.079 INFO ab7c64738d52 mbatchTrimData Starting
## 2020 11 18 16:18:42.079 INFO ab7c64738d52 MBatch Version: BEA_VERSION_TIMESTAMP
## 2020 11 18 16:18:42.079 INFO ab7c64738d52 mbatchTrimData theMaxSize= 1600000
## 2020 11 18 16:18:42.079 INFO ab7c64738d52 mbatchTrimData ncol(theMatrix)= 80
## 2020 11 18 16:18:42.079 INFO ab7c64738d52 mbatchTrimData nrow(theMatrix)= 1250
## 2020 11 18 16:18:42.079 INFO ab7c64738d52 mbatchTrimData Finishing
## 2020 11 18 16:18:42.080 INFO ab7c64738d52 ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
## 2020 11 18 16:18:42.080 DEBUG ab7c64738d52 createBatchEffectsOutput_BoxPlot_AllSampleRLE
## 2020 11 18 16:18:42.080 DEBUG ab7c64738d52 checkCreateDir:  /builds/BatchEffects_clean/Ba
## 2020 11 18 16:18:42.081 DEBUG ab7c64738d52 dim(theMatrixGeneData) 1250, dim(theMatrixGene
## 2020 11 18 16:18:42.081 DEBUG ab7c64738d52 length(colnames(theMatrixGeneData)) 80
## 2020 11 18 16:18:42.081 DEBUG ab7c64738d52 length(rownames(theMatrixGeneData)) 1250
## 2020 11 18 16:18:42.081 DEBUG ab7c64738d52 dim(theDataframeBatchData) 80, dim(theDatafram
## 2020 11 18 16:18:42.081 DEBUG ab7c64738d52 length(names(theDataframeBatchData)) 5
## 2020 11 18 16:18:42.082 DEBUG ab7c64738d52 batchTypeName =  BatchId
## 2020 11 18 16:18:42.082 DEBUG ab7c64738d52 theBatchType= BatchId
## 2020 11 18 16:18:42.082 DEBUG ab7c64738d52 calcAndWriteBoxplot - theBoxDataFile= /builds/
## 2020 11 18 16:18:42.083 DEBUG ab7c64738d52 calcAndWriteBoxplot - theMedian= 0.464534
## 2020 11 18 16:18:42.086 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[1]= 1250
## 2020 11 18 16:18:42.086 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[2]= 80
## 2020 11 18 16:18:42.087 DEBUG ab7c64738d52 checkCreateDir:  /builds/BatchEffects_clean/Ba
## 2020 11 18 16:18:42.087 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteBoxDa
## 2020 11 18 16:18:42.087 DEBUG ab7c64738d52 calcAndWriteBoxDataFile theFile= /builds/Batch
## 2020 11 18 16:18:42.088 DEBUG ab7c64738d52 calcAndWriteBoxDataFile thePngFile= /builds/Ba
## 2020 11 18 16:18:42.118 DEBUG ab7c64738d52 calcAndWriteBoxDataFile CairoPNG= /builds/Batc
## 2020 11 18 16:18:42.120 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call boxplot
## 2020 11 18 16:18:42.151 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call text
## 2020 11 18 16:18:42.162 DEBUG ab7c64738d52 calcAndWriteBoxDataFile done
## 2020 11 18 16:18:42.208 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteBoxDat
## 2020 11 18 16:18:42.208 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteHisto
## 2020 11 18 16:18:42.209 DEBUG ab7c64738d52 calcAndWriteHistogramFile  /builds/BatchEffect
## 2020 11 18 16:18:42.303 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteHistog
## 2020 11 18 16:18:42.304 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteAnnot
## 2020 11 18 16:18:42.305 DEBUG ab7c64738d52 calcAndWriteAnnotationsFile theFile= /builds/B
## 2020 11 18 16:18:42.310 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteAnnota
```

```
## 2020 11 18 16:18:42.311 DEBUG ab7c64738d52 batchTypeName =  PlateId
## 2020 11 18 16:18:42.311 DEBUG ab7c64738d52 theBatchType= PlateId
## 2020 11 18 16:18:42.311 DEBUG ab7c64738d52 calcAndWriteBoxplot - theBoxDataFile= /builds/
## 2020 11 18 16:18:42.311 DEBUG ab7c64738d52 calcAndWriteBoxplot - theMedian= 0.464534
## 2020 11 18 16:18:42.315 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[1]= 1250
## 2020 11 18 16:18:42.315 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[2]= 80
## 2020 11 18 16:18:42.315 DEBUG ab7c64738d52 checkCreateDir:  /builds/BatchEffects_clean/Ba
## 2020 11 18 16:18:42.316 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteBoxDa
## 2020 11 18 16:18:42.316 DEBUG ab7c64738d52 calcAndWriteBoxDataFile theFile= /builds/Batch
## 2020 11 18 16:18:42.316 DEBUG ab7c64738d52 calcAndWriteBoxDataFile thePngFile= /builds/Ba
## 2020 11 18 16:18:42.345 DEBUG ab7c64738d52 calcAndWriteBoxDataFile CairoPNG= /builds/Batc
## 2020 11 18 16:18:42.346 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call boxplot

## 2020 11 18 16:18:42.377 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call text
## 2020 11 18 16:18:42.386 DEBUG ab7c64738d52 calcAndWriteBoxDataFile done
## 2020 11 18 16:18:42.432 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteBoxDat
## 2020 11 18 16:18:42.432 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteHisto
## 2020 11 18 16:18:42.433 DEBUG ab7c64738d52 calcAndWriteHistogramFile  /builds/BatchEffect
## 2020 11 18 16:18:42.509 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteHistog
## 2020 11 18 16:18:42.510 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteAnnot
## 2020 11 18 16:18:42.510 DEBUG ab7c64738d52 calcAndWriteAnnotationsFile theFile= /builds/B
## 2020 11 18 16:18:42.516 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteAnnota
## 2020 11 18 16:18:42.516 DEBUG ab7c64738d52 batchTypeName =  ShipDate
## 2020 11 18 16:18:42.516 DEBUG ab7c64738d52 theBatchType= ShipDate
## 2020 11 18 16:18:42.517 DEBUG ab7c64738d52 calcAndWriteBoxplot - theBoxDataFile= /builds/
## 2020 11 18 16:18:42.517 DEBUG ab7c64738d52 calcAndWriteBoxplot - theMedian= 0.464534
## 2020 11 18 16:18:42.520 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[1]= 1250
## 2020 11 18 16:18:42.520 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[2]= 80
## 2020 11 18 16:18:42.521 DEBUG ab7c64738d52 checkCreateDir:  /builds/BatchEffects_clean/Ba
## 2020 11 18 16:18:42.521 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteBoxDa
## 2020 11 18 16:18:42.521 DEBUG ab7c64738d52 calcAndWriteBoxDataFile theFile= /builds/Batch
## 2020 11 18 16:18:42.521 DEBUG ab7c64738d52 calcAndWriteBoxDataFile thePngFile= /builds/Ba
## 2020 11 18 16:18:42.552 DEBUG ab7c64738d52 calcAndWriteBoxDataFile CairoPNG= /builds/Batc
## 2020 11 18 16:18:42.553 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call boxplot

## 2020 11 18 16:18:42.584 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call text
## 2020 11 18 16:18:42.595 DEBUG ab7c64738d52 calcAndWriteBoxDataFile done
## 2020 11 18 16:18:42.642 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteBoxDat
## 2020 11 18 16:18:42.642 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteHisto
## 2020 11 18 16:18:42.643 DEBUG ab7c64738d52 calcAndWriteHistogramFile  /builds/BatchEffect
## 2020 11 18 16:18:42.725 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteHistog
## 2020 11 18 16:18:42.726 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteAnnot
## 2020 11 18 16:18:42.726 DEBUG ab7c64738d52 calcAndWriteAnnotationsFile theFile= /builds/B
## 2020 11 18 16:18:42.733 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteAnnota
## 2020 11 18 16:18:42.733 DEBUG ab7c64738d52 batchTypeName =  TSS
## 2020 11 18 16:18:42.734 DEBUG ab7c64738d52 theBatchType= TSS
## 2020 11 18 16:18:42.734 DEBUG ab7c64738d52 calcAndWriteBoxplot - theBoxDataFile= /builds/
```

```
## 2020 11 18 16:18:42.734 DEBUG ab7c64738d52 calcAndWriteBoxplot - theMedian= 0.464534
## 2020 11 18 16:18:42.739 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[1]= 1250
## 2020 11 18 16:18:42.740 DEBUG ab7c64738d52 calcAndWriteBoxplot - dim(theData)[2]= 80
## 2020 11 18 16:18:42.740 DEBUG ab7c64738d52 checkCreateDir:  /builds/BatchEffects_clean/Ba
## 2020 11 18 16:18:42.740 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteBoxDa
## 2020 11 18 16:18:42.740 DEBUG ab7c64738d52 calcAndWriteBoxDataFile theFile= /builds/Batch
## 2020 11 18 16:18:42.740 DEBUG ab7c64738d52 calcAndWriteBoxDataFile thePngFile= /builds/Ba
## 2020 11 18 16:18:42.774 DEBUG ab7c64738d52 calcAndWriteBoxDataFile CairoPNG= /builds/Batc
## 2020 11 18 16:18:42.775 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call boxplot

## 2020 11 18 16:18:42.807 DEBUG ab7c64738d52 calcAndWriteBoxDataFile call text
## 2020 11 18 16:18:42.826 DEBUG ab7c64738d52 calcAndWriteBoxDataFile done
## 2020 11 18 16:18:42.874 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteBoxDat
## 2020 11 18 16:18:42.875 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteHisto
## 2020 11 18 16:18:42.875 DEBUG ab7c64738d52 calcAndWriteHistogramFile  /builds/BatchEffect
## 2020 11 18 16:18:42.966 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteHistog
## 2020 11 18 16:18:42.967 DEBUG ab7c64738d52 calcAndWriteBoxplot - before calcAndWriteAnnot
## 2020 11 18 16:18:42.967 DEBUG ab7c64738d52 calcAndWriteAnnotationsFile theFile= /builds/B
## 2020 11 18 16:18:42.973 DEBUG ab7c64738d52 calcAndWriteBoxplot - after calcAndWriteAnnota

## [1] TRUE
```

Example File Output

The above code creates the following subdirectories and files. The subdirectories correspond to the run type were requested.

```
/output/Boxplot_AllSamplesRLE_Structures$ ls -l
total 44
drwxr-xr-x 2 linux linux 40960 Jun 19 11:41 AllSample-RLE
```

Looking at the "AllSample-RLE" subdirectory, it contains the diagram and legend files, and data usable with dynamic displays.

```
/output/Boxplot_AllSamplesRLE_Structures/AllSample-RLE$ ls -l
total 2472
-rw-r--r-- 1 linux linux  3873 Jun 19 11:40 BoxPlot_AllSample-RLE_Annotations-BatchId.tsv
-rw-r--r-- 1 linux linux  3873 Jun 19 11:41 BoxPlot_AllSample-RLE_Annotations-PlateId.tsv
-rw-r--r-- 1 linux linux  3873 Jun 19 11:41 BoxPlot_AllSample-RLE_Annotations-ShipDate.tsv
-rw-r--r-- 1 linux linux  3873 Jun 19 11:41 BoxPlot_AllSample-RLE_Annotations-TSS.tsv
-rw-r--r-- 1 linux linux 15387 Jun 19 11:40 BoxPlot_AllSample-RLE_BoxData-BatchId.tsv
-rw-r--r-- 1 linux linux 15387 Jun 19 11:41 BoxPlot_AllSample-RLE_BoxData-PlateId.tsv
-rw-r--r-- 1 linux linux 15387 Jun 19 11:41 BoxPlot_AllSample-RLE_BoxData-ShipDate.tsv
-rw-r--r-- 1 linux linux 15387 Jun 19 11:41 BoxPlot_AllSample-RLE_BoxData-TSS.tsv
-rw-r--r-- 1 linux linux     9 Jun 19 11:40 BoxPlot_AllSample-RLE_CatData-BatchId-TCGA-OR-A5
-rw-r--r-- 1 linux linux  7647 Jun 19 11:40 BoxPlot_AllSample-RLE_CatData-BatchId-TCGA-OR-A5
#snipped out "CatData" files for each sample for each batch type
```

```
-rw-r--r-- 1 linux linux  6688 Jun 19 11:41 BoxPlot_AllSample-RLE_CatData-TSS-TCGA-PK-A5HA-0
-rw-r--r-- 1 linux linux  5583 Jun 19 11:41 BoxPlot_AllSample-RLE_CatData-TSS-TCGA-PK-A5HB-0
-rw-r--r-- 1 linux linux  60434 Jun 19 14:27 BoxPlot_AllSample-RLE_Diagram-BatchId.png
-rw-r--r-- 1 linux linux  59978 Jun 19 14:27 BoxPlot_AllSample-RLE_Diagram-PlateId.png
-rw-r--r-- 1 linux linux  60366 Jun 19 14:27 BoxPlot_AllSample-RLE_Diagram-ShipDate.png
-rw-r--r-- 1 linux linux  58667 Jun 19 14:27 BoxPlot_AllSample-RLE_Diagram-TSS.png
-rw-r--r-- 1 linux linux 819911 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-BatchId.png
-rw-r--r-- 1 linux linux  45619 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-BatchId.tsv
-rw-r--r-- 1 linux linux 819911 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-PlateId.png
-rw-r--r-- 1 linux linux  45619 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-PlateId.tsv
-rw-r--r-- 1 linux linux 819911 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-ShipDate.png
-rw-r--r-- 1 linux linux  45619 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-ShipDate.tsv
-rw-r--r-- 1 linux linux 819911 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-TSS.png
-rw-r--r-- 1 linux linux  45619 Jun 19 14:27 BoxPlot_AllSample-RLE_Histogram-TSS.tsv
-rw-r--r-- 1 linux linux   4358 Jun 19 14:27 BoxPlot_AllSample-RLE_Legend-BatchId.png
-rw-r--r-- 1 linux linux   4378 Jun 19 14:27 BoxPlot_AllSample-RLE_Legend-PlateId.png
-rw-r--r-- 1 linux linux   4593 Jun 19 14:27 BoxPlot_AllSample-RLE_Legend-ShipDate.png
-rw-r--r-- 1 linux linux  13061 Jun 19 14:27 BoxPlot_AllSample-RLE_Legend-TSS.png
```

##Files

Example data may not match output from above.

##Annotations Files Looking at BoxPlot_AllSample-RLE_Annotations-TSS.tsv, we see it is a tab-delimited file, with two columns with the headers "key" nad "value". The first entry after that is the "Total-Data-Points", and then for each sample, we have the number of points available for that sample that are not NA. These two numbers will not always be equal, since some samples may have NAs for genes or probes where the other samples have values.

```
key value
Total-Data-Points   1250
Non-NA-Points-TCGA-OR-A5J1-01A-11D-A29J-05  1250
Non-NA-Points-TCGA-OR-A5J2-01A-11D-A29J-05  1250
Non-NA-Points-TCGA-OR-A5J3-01A-11D-A29J-05  1250
Non-NA-Points-TCGA-OR-A5J4-01A-11D-A29J-05  1250
Non-NA-Points-TCGA-OR-A5J5-01A-11D-A29J-05  1250
```

##BoxData Files Looking at BoxPlot_AllSample-RLE_BoxData-TSS.tsv, we see it is a tab delimited file with headers indicating the Id (sample) and the different parts of the boxplot. Subsequent rows give the box settings for each sample. NAs are possible in this data.

```
Id  LowerOutMax LowerOutMin LowerNotch  LowerWhisker    LowerHinge  Median  UpperHinge  Uppe
TCGA-OR-A5J1-01A-11D-A29J-05    NA  NA  -0.020527642802858643   -0.8467955227772493 -0.40564
TCGA-OR-A5J2-01A-11D-A29J-05    NA  NA  -0.002911079872554134   -0.039930119705853896   -0.0
TCGA-OR-A5J3-01A-11D-A29J-05    NA  NA  -0.035001758602725926   -0.3988124487830225 -0.34987
TCGA-OR-A5J4-01A-11D-A29J-05    NA  NA  -0.017185120892053492   -0.8247218460963763 -0.31831
TCGA-OR-A5J5-01A-11D-A29J-05    NA  NA  -0.03364073791133153    -0.8079754846584357 -0.64425
```

```
TCGA-OR-A5J6-01A-31D-A29J-05    NA  NA  -0.0034328681890936023  -0.04187597080189986    -0.0
TCGA-OR-A5J7-01A-11D-A29J-05    -0.865878813052012  -0.18821669173503153    -0.0038894121418
```

##CatData Files If we look at BoxPlot_AllSample-RLE_CatData-TSS-TCGA-PK-A5HB-01A-11D-A29J-05.tsv, we see it is a tab-delimited file with "id" and "value" as headers. The id is a feature (in this case a gene, probe, location) combination and then the value from the data for that id. This is used to populate the violin plot with a subset of outliers, if any.

```
id  value
ADCY4-cg14287235-14-24804339    -0.7667974166463363
ASCL2-cg12499235-11-2293173 -0.7077020078715286
BAI1-cg09968723-8-143545789 -0.8074333452970504
BNC1-cg06523224-15-83953883 -0.7850694441252194
```

##Histogram Data Files Looking at BoxPlot_AllSample-RLE_Histogram-TSS.tsv, we see it is a tab-delimited file. The first row is headers, with "entry" and "size" being the first two, followed by pairs of headers of the form "xN" and "yN", where they are pairs of X,Y coordinates for plotting the histogram. The entry column is the sample id and the size entry is the number of X,Y pairs.

```
entry   size    x0  y0  x1  y1  x2  y2  x3  y3  x4  y4  x5  y5  x6  y6  x7  y7  x8  y8  x9
TCGA-OR-A5J1-01A-11D-A29J-05    12  -0.8064387185053226 193.0   -0.7257251099614688 44.0
TCGA-OR-A5J2-01A-11D-A29J-05    79  -0.033911616995144944   168.0   -0.02187461157372705
TCGA-OR-A5J3-01A-11D-A29J-05    7   -0.32982819164709853    520.0   -0.19185967737525045
```

##Diagram Here is a diagram generated from this code.