HistogramTools 0.1
Quick Reference Guide

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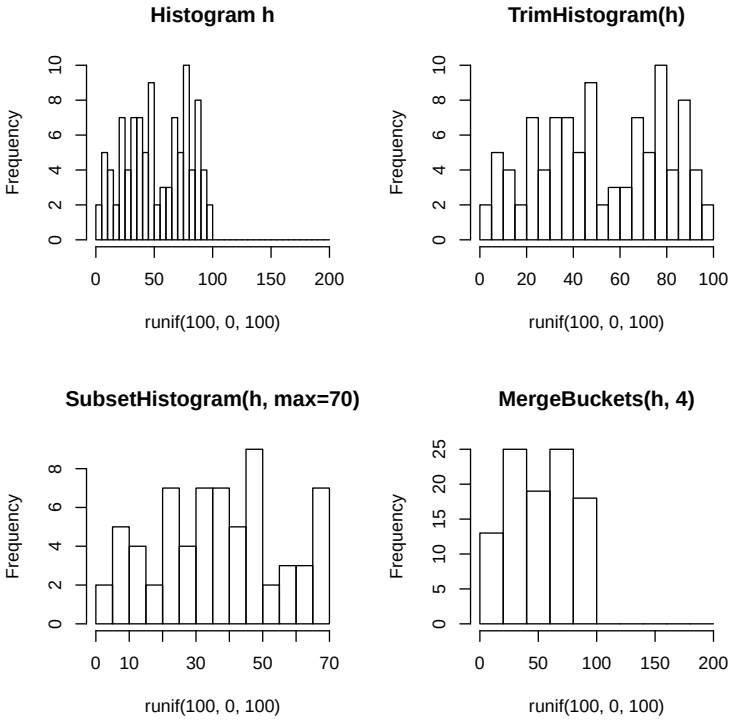
Histogram Manipulation This package includes a number of basic functions for subsetting, trimming, merging, adding, and otherwise manipulating basic R histogram objects.

```
> h <- hist(runif(100, 0, 100),
+           breaks=seq(from=0,to=200,by=5), plot=F)
> TrimHistogram(h)
> SubsetHistogram(h, maxbreak=70)
> MergeBuckets(h, adj.buckets=2)
```



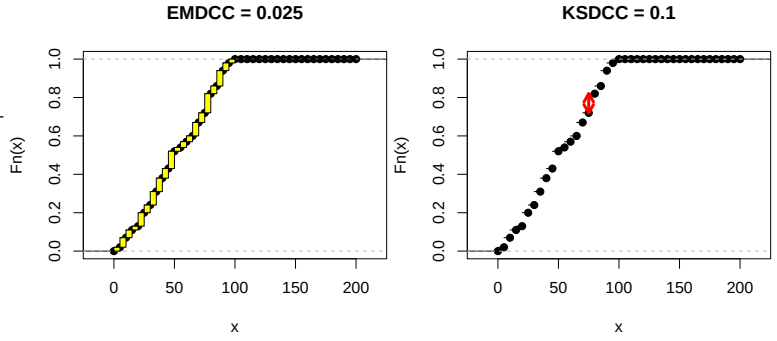
Information Loss The introduction of binning a dataset into a histogram introduces information loss. The Kolmogorov-Smirnov Distance of the Cumulative Curves (KSDCC) and Earth Mover's Distance of the Cumulative Curves (EMDCC) are two error metrics for histograms. The plots here show a visual representation of the returned value. EMDCC is the area of the yellow boxes and KSDCC is the distance of the red arrow.

```
> par(mfrow=c(1,2), par(mar=c(5,4,4,0)+0.1))
> PlotEMDCC(h)
> PlotKSDCC(h)
> EMDCC(h)

[1] 0.025

> KSDCC(h)

[1] 0.1
```



Serialize a Histogram This package includes functions for reading and writing Histograms from other tools. Most notably, it can encode or decode any arbitrary R histogram into a portable protocol buffer format to send to other programs written in other languages.

```
> hist.msg <- as.Message(h)
> length(hist.msg$serialize(NULL))

[1] 469
```

Common HistogramTools Functions

`HistToEcdf`	Return the cumulative distribution function of histogram
`AddHistograms`	Aggregate two or more histograms for different data sets with identical bucket boundaries
`MergeBuckets`	Merge adjacent bucket boundaries to return a histogram with fewer buckets
`Count`	Return the number of data points in hist
`ApproxMean`	Return an approximate mean of the binned data
`ApproxQuantile`	Return an approximate quantile of the binned data
`SubsetHistogram`	Return a new histogram with a subset of the buckets
`TrimHistogram`	Return a new histogram with empty buckets at the left or right of distribution removed
`PlotLog2ByteEcdf`	Plot ECDF of hist with power of two bucket boundaries
`PlotLogTimeDurationEcdf`	Plot ECDF of hist with log-scaled time duration bucket boundaries
`PlotKSDCC`	Plot ECDF of hist with annotation at point of KS distance of the cumulative curves
`PlotEMDCC`	Plot ECDF of hist with annotation showing earth mover's distance of the cumulative curves
`KSDCC`	Return the Kolmogorov-Smirnov distance of the cumulative curves (btwn 0 and 1)
`EMDCC`	Return the Earth Mover's distance of the cumulative curves (btwn 0 and 1)
`as.histogram`	Parse a HistogramState protocol buffer and return an R histogram
`as.Message`	Serialize an R histogram as a HistogramState protocol buffer
`ReadHistogramsFromDtraceOutputFile`	Read histograms from DTrace output