

HistogramTools 0.1: Quick Reference Guide

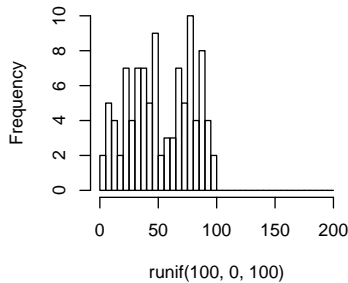
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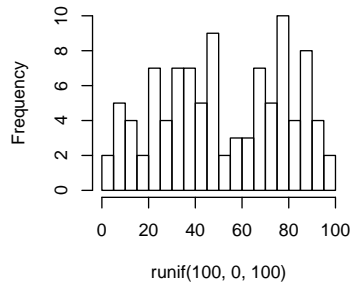
Histogram Manipulation This package includes a number of basic functions for subsetting, trimming, merging, adding, and otherwise manipulating basic R histogram objects.

```
> 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)
```

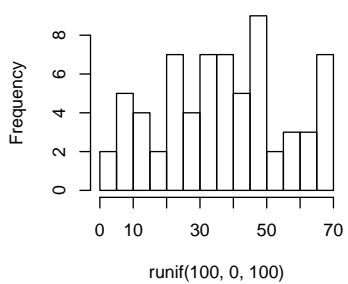
Histogram h



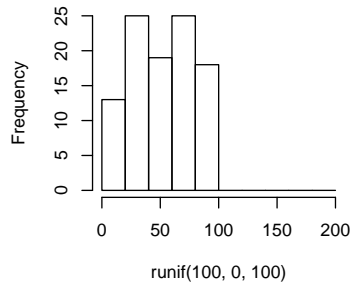
TrimHistogram(h)



SubsetHistogram(h, max=70)



MergeBuckets(h, 4)



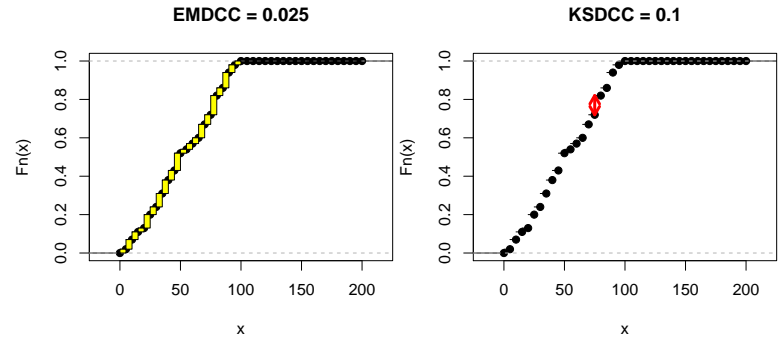
Information Loss The introduction of binning a dataset into a histogram introduces information loss. The Kolmogorov-Smirnov Distance of the Cumulative Curves (KSDCC) and Earth Mover's Distance of the Cumulative Curves (EMDCC) are two provided error metrics for histograms. The plots here show a visual 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 Methods

HistToEcdf	Returns 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	Returns a new histogram with a subset of the buckets
TrimHistogram	Returns a new histogram with empty buckets at the left or right of distribution removed
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 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