Making ltxsparklines package in R: A journey of a CTAN contributor into the world of CRAN

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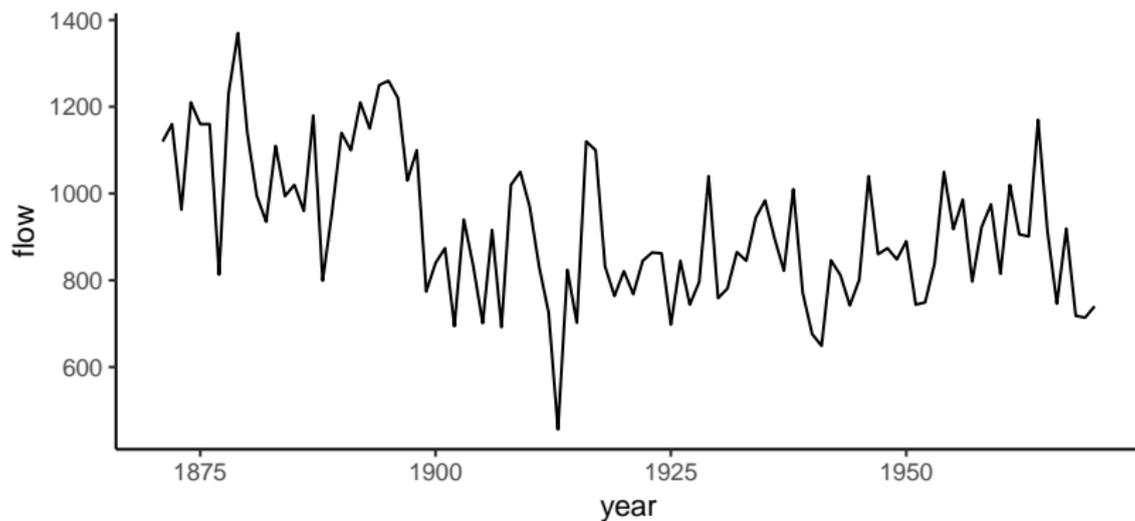
TUG@BachoTeX 2017

What we are talking about

1. What are sparklines?
2. What is R?
3. What is CRAN?

What are sparklines?

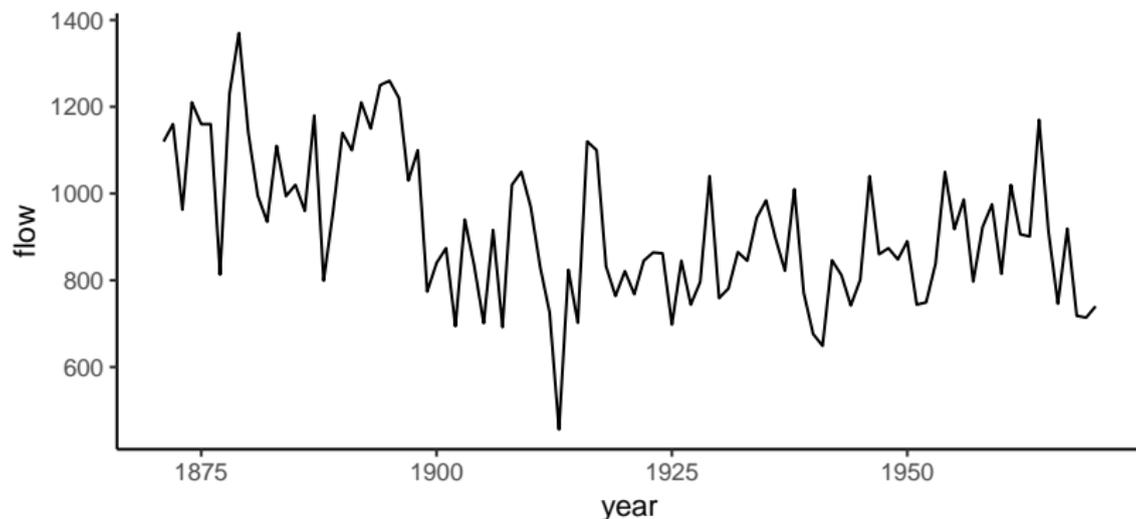Standard plots give a lot of information—but take much place.

Annual flow of the river Nile at Aswan

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Annual flow of the river Nile at Aswan

Generally, the flow of Nile was higher in 19th century than in 20th,

More examples

TUG membership over the years shows a growth in the pre-internet years, and slow decline since you no longer need to be a TUG member to get the distribution .

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The previous graph shows the end of year data. The monthly data are noisy due to the patterns in renewals.
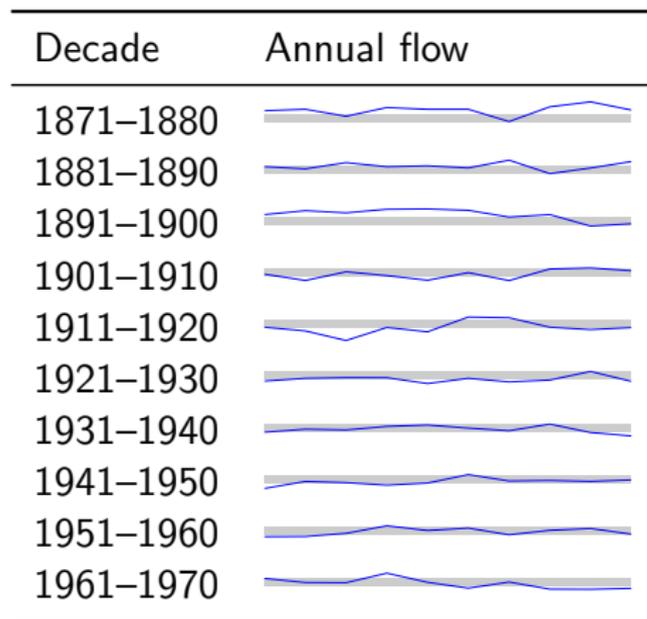
More examples

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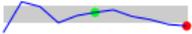
Perhaps barchart is better suited for this: .
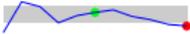
Even more examples: Nile again

Decade	Annual flow
1871–1880	
1881–1890	
1891–1900	
1901–1910	
1911–1920	
1921–1930	
1931–1940	
1941–1950	
1951–1960	
1961–1970	

Sparklines package

LaTeX package by Andreas Loeffler & Dan Luecking.
A typical sparkline:

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A typical sparkline:

The code:

```
A typical sparkline:
\begin{sparkline}{10}
  \sparkrectangle 0.3 0.8
  \sparkdot 0.5 0.62 green
  \sparkdot 1 0.2 red
  \spark 0 0 0.1 0.95  0.2 0.8 0.3 0.3 0.4 0.52 0.5 0.62
         0.6 0.7   0.7 0.5 0.8 0.4 0.9 0.25 1 0.2 /
\end{sparkline}
```

R and knitr I

I am grateful to Uwe Ziegenhagen who introduced me to R back in 2010. I used to work 90% in T_EX. Now it is 40% pure T_EX, and 50% R→T_EX.

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An R fragment:

```
<<>>=
r <- rnorm(10000)
hist(r)
@
```
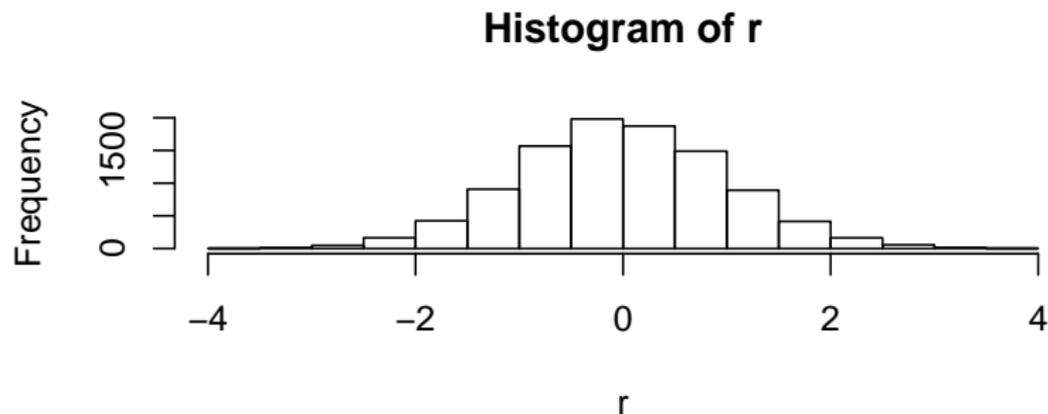
R and knitr I

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An R fragment:

```
<<>>=
r <- rnorm(10000)
hist(r)
@
```

Run-on text:

```
We have $\Sexpr{length(r)}$ values with the mean
$\Sexpr{mean(r)}$ and
standard deviation $\Sexpr{sd(r)}$.
```

R and knitr II

```r
r <- rnorm(10000)
hist(r)
```

Histogram of r

We have 10000 values with the mean −0.0091544 and standard deviation 0.9931623.

Ltxsparklines: R interface

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Ltxsparklines: R interface

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.

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yspikes=tug[['Members']], ylim=c(0,NA))}: .

\Sexpr{sparkline(tug[['Date']], tug[['Members']],
enddotcolor='red', ylim=c(0,NA))}:

Ltxsparklines: options

sparkline(x, y, xspikes, yspikes, xdots, ydots, dotcolor, width, rectangle, xlim, ylim, clip, na.rm, bottomline, bottomlinelength, bottomlinex, startdotcolor, enddotcolor, output)

Ltxsparklines: options

sparkline(x, y, xspikes, yspikes, xdots, ydots, dotcolor, width, rectangle, xlim, ylim, clip, na.rm, bottomline, bottomlinelength, bottomlinex, startdotcolor, enddotcolor, output)

Spikes: ｜｜｜.

sparkline(x, y, xspikes, yspikes, xdots, ydots, dotcolor, width, rectangle, xlim, ylim, clip, na.rm, bottomline, bottomlinelength, bottomlinex, startdotcolor, enddotcolor, output)
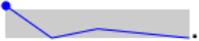
Spikes: .
Colored dots:

Ltxsparklines: options

sparkline(x, y, xspikes, yspikes, xdots, ydots, dotcolor, width, rectangle, xlim, ylim, clip, na.rm, bottomline, bottomlinelength, bottomlinex, startdotcolor, enddotcolor, output)
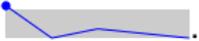
Spikes: .
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Clipping: compare an unclipped sparkline and a clipped one .

Ltxsparklines: options

> **sparkline**(x, y, xspikes, yspikes, xdots, ydots, dotcolor, width, rectangle, xlim, ylim, clip, na.rm, bottomline, bottomlinelength, bottomlinex, startdotcolor, enddotcolor, output)
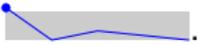
Spikes: .
Colored dots:
Rectangles: .
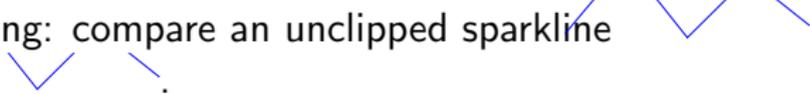Clipping: compare an unclipped sparkline and a clipped one .
Bottomlines: , , .

Conclusions

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1. A simple, but versartile package to create sparklines.
2. A way to make better documentation and reports about data intensive topics.
3. (for the author) A useful exercise in creation of R packages—a sort of extended "Hello, world".

CRAN, CPAN and CTAN

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1. Coding standards enforcement: some on CTAN, some on CPAN, dictatorship on CRAN.
2. Authentication: none on CTAN, passwords on CPAN, e-mail with one-time link on CRAN.
3. Automatic testing: voluntary on CTAN, voluntary & automatic on CPAN, very much mandatory on CRAN.