ggplot
An implementation of the Grammar of Graphics in R
(A new way of making graphics in R)

Overview
Components of a graphic
Types of graphics, and how to create them
Comparison with lattice and base graphics
Future work
How to get it

What is a graphic?
A mapping from data to aesthetic properties of graphical objects
Data + scales + grobs (+ facetting)
Can easily describe any standard plot


What am I?
x position is a linear scaling of x variable
same for y variable
graphical object: points
extensions: size, colours
Components

- Grobs: lines, points, bars, area, rectangles, polygons, text, paths, tiles, ribbons, contours, density plot, quantile regression, smooths, histogram, hexagon binning, jittered points, box and whisker plots, groups
- Scales: colour, fill, size, glyph, line type, transformed
- Facetting: rows ~ columns

```r
qplot(wt, mpg, data=mtcars, type=c("smooth", "point"))
```

```r
qplot(x=wt, data=mtcars, type=c("histogram", "density"))
```

```r
qplot(wt, mpg, data=mtcars, col=cyl, size=wt, glyph=cyl)
```
p <- qplot(total_bill, tip, sex ~ smoker, data=tips)

p <- ggpoint(p, aes=list(colour=tip/total_bill))

p <- ggabline(p, slope=c(0.1,0.15,0.2))

p <- ggabline(p, slope=c(0.1,0.15,0.2))
### Comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>Base</th>
<th>Lattice</th>
<th>ggplot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic legends</td>
<td>✗</td>
<td>✗/✔</td>
<td>✔</td>
</tr>
<tr>
<td>Easy conditioning</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Easy to use multiple data sources</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td>Build up plot piece by piece</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td>Easy to extend</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td>Consistent functions</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td>Attractive defaults</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td>Non-Cartesian coordinate systems</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
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</tbody>
</table>

### The future

- Non Euclidean/Cartesian geometries
- Extend to interactive and dynamic graphics (my thesis)

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http://had.co.nz/ggplot

Or just google for ggplot