

## Lecture 21 - R Software

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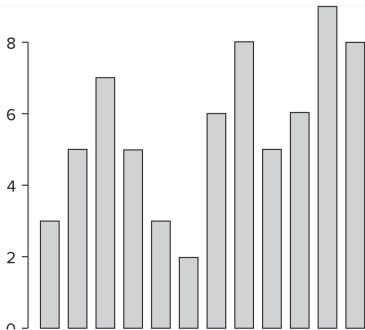
## BAR CHARTS

The bar chart is suitable for showing data given with discrete categories. We use the `barplot()` command to produce bar charts.

### Single-category Bar charts

Consider, the data of a single vector of numeric values given as:

```
> rain  
[1] 3 5 7 5 3 2 6 8 5 6 9 8  
> barplot(rain)
```



We can also make names for the bars, by using the `names =` instruction to point to a vector of names.

```
> rain
```

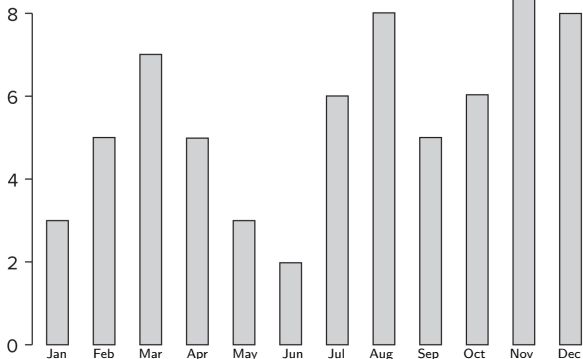
```
[1] 3 5 7 5 3 2 6 8 5 6 9 8
```

```
> month
```

```
[1] "Jan" "Feb" "Mar" "Apr" "May" "Jun" "Jul" "Aug" "Sep" "Oct"
```

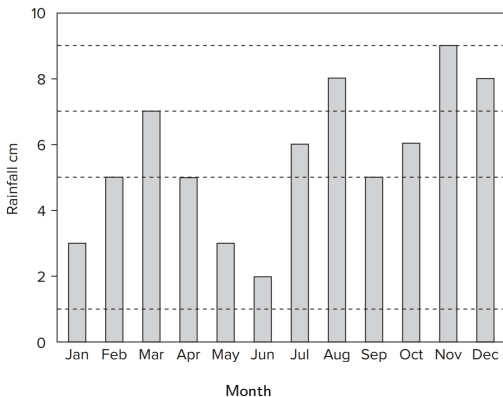
```
[11] "Nov" "Dec"
```

```
> barplot(rain, names = month)
```



We can add a customized line under the bars using the `abline()` command:

```
> barplot(rain, xlab = 'Month', ylab = 'Rainfall cm', ylim = c(0,10))
> abline(h = seq(1,9,2), lty = 2, lwd = 0.5)
> box()
```



**NOTE:** The `seq()` command specifies the starting value, the ending value, and the interval to create horizontal lines.

- The `lty =` instruction sets the line to be dashed.
- The `lwd =` instruction makes the lines a bit thinner than usual.

## Multiple Category Bar Charts

So far, we have studied all the data relate to categories in one group, that is, a single "row" of data. We can also arrange these multiple categories to display on one single plot.

### Types of Bars

- Stacked(a pile of objects) bars
- Grouped bars.

### ★ Stacked Bar Charts

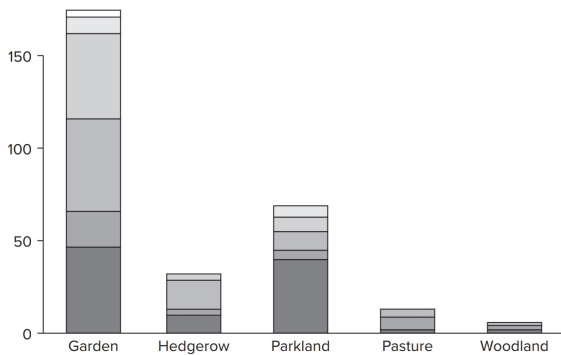
If data contains several groups of categories, we can display the data in a bar chart.

Remark: When data are in a matrix with several rows, the default bar chart is a stacked chart .

> bird

	Garden	Hedgerow	Parkland	Pasture	Woodland
Blackbird	47	10	40	2	2
Chaffinch	19	3	5	0	2
Great Tit	50	0	10	7	0
House Sparrow	46	16	8	4	0
Robin	9	3	0	0	2
Song Thrush	4	0	6	0	0

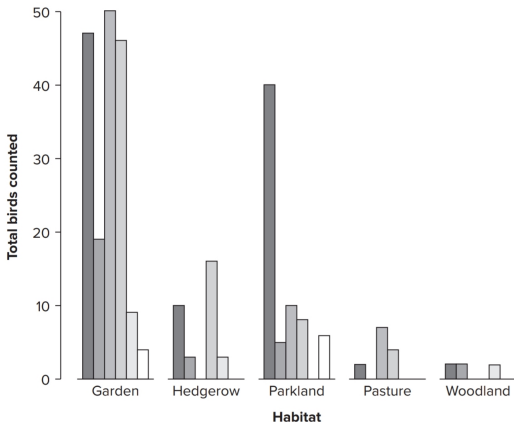
```
> barplot(bird)
```



## ★ Grouped Bar Charts

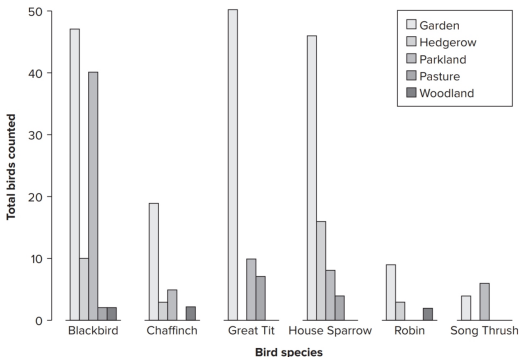
To change the above graphs by column to be unstacked, we use `beside = TRUE` .

```
> barplot(bird, beside = TRUE, ylab = 'Total birds counted', xlab = 'Habitat')
```



◆ The resulting graph now shows as a series of bars in each of the column categories.

- ★ In order to see which bar relates to which row category, we need a `legend = TRUE`.
- ★ If we have the row categories as the main bars, split by column, we transpose the matrix of data. By using the `t()`:
  - > `barplot(t(bird), beside = TRUE, legend = TRUE, cex.names = 0.8)`
  - > `title(ylab = 'Bird Count', xlab = 'Bird Species')`



NOTE: `cex.names = 0.8` makes the bar name labels a bit smaller so that they display neatly .

## Horizontal Bars

To make the bars horizontal rather than the default vertical we use `horiz = TRUE`.

```
> barplot(bird, beside = TRUE, legend = TRUE, horiz = TRUE, xlim = c(0, 60))
> title(ylab = 'Habitat', xlab = 'Bird count')
```

