Diallel Research Report

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This manual shows features of graphics in the **knitr** package in detail, including the graphical devices, plot recording, plot rearrangement, control of plot sizes, the tikz device, figure captions, animations and other types of plots such as **rgl** or GGobi plots.

The path and R package dependencies in this project were managed by `Packrat`[1] and `knitr`.

[1] `http://rstudio.github.io/packrat/`

```
library(knitr)
opts_knit$set(root.dir = normalizePath("../"))
```

Phenotypic data

Reformat Sofiane's phenotypic data to a matrix.

data from external folder were loaded

```
source("munge/1.raw_pheno/1.A.1_format_pheno.R")
```

plot the phentoypic data per se

```
source("profiling/1.pheno/1.A.1_pheno_plot.R")
```

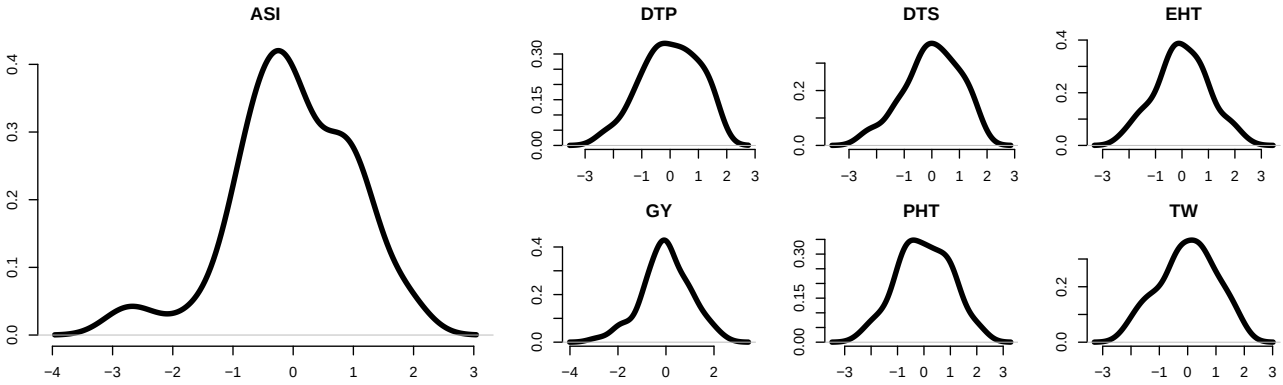

Figure 1: phenotypic data distribution

Based on the normality test, the above seven traits show P-values range from c(). Therefore, we have no evidence to reject the normal distribution of the phenotype.

Levels of heterosis of the seven traits

```
source("profiling/1.pheno/1.A.2_pheno_loh_plot.R")
```

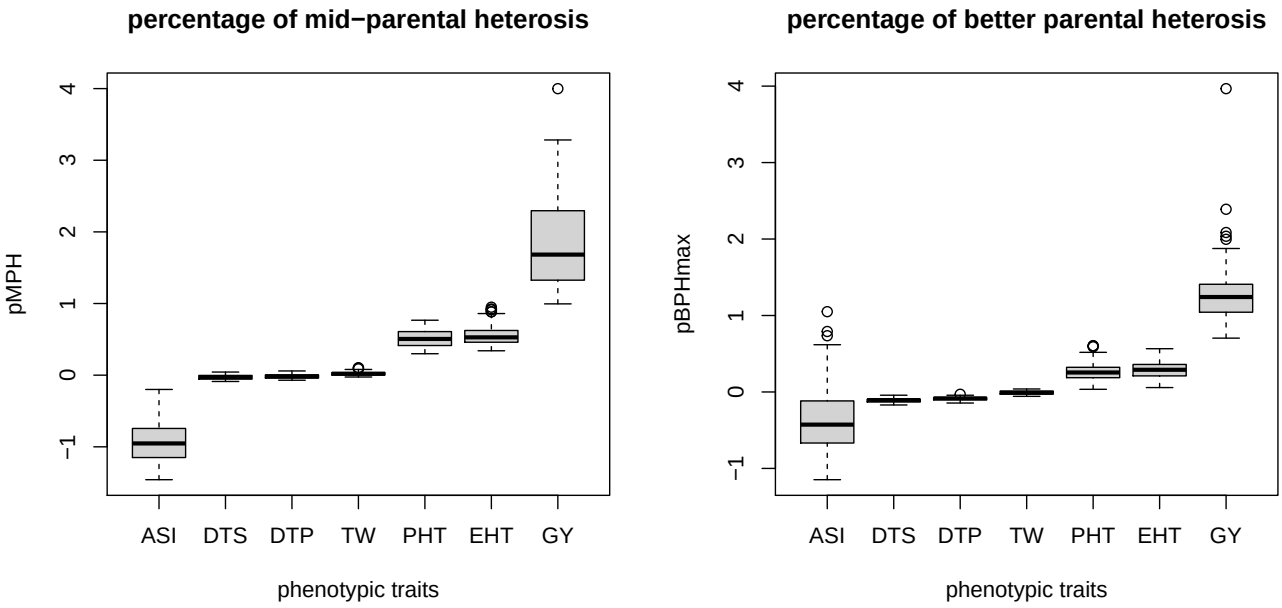

Figure 2: Variations of the levels of heterosis

Correlation of the seven phenotypic traits

```
source("profiling/1.pheno/1.A.3_pheno_cor_plot.R")
### get the pheno per se
myp1 <- get_pheno(trait = trait, pheno = "valHyb")
pairs(myp1[, 2:8], text.panel = diag, upper.panel = panel.smooth,
    lower.panel = panel.cor, gap = 0, main = "",
    pch = 19, col = "grey", lwd = 2)
```

some words here.

```
source("profiling/1.pheno/1.A.3_pheno_cor_plot.R")
### get percentage of BPHmax
myp2 <- get_pheno(trait = trait, pheno = "pBPHmax")
pairs(myp2[, 2:8], text.panel = diag, upper.panel = panel.smooth,
    lower.panel = panel.cor, gap = 0, main = "",
    pch = 19, col = "grey", lwd = 2)
```

some words here.

```
source("profiling/1.pheno/1.A.3_pheno_cor_plot.R")
### get percentage of BPHmax
myp3 <- get_pheno(trait = trait, pheno = "pMPH")
pairs(myp3[, 2:8], text.panel = diag, upper.panel = panel.smooth,
    lower.panel = panel.cor, gap = 0, main = "",
    pch = 19, col = "grey", lwd = 2)
```

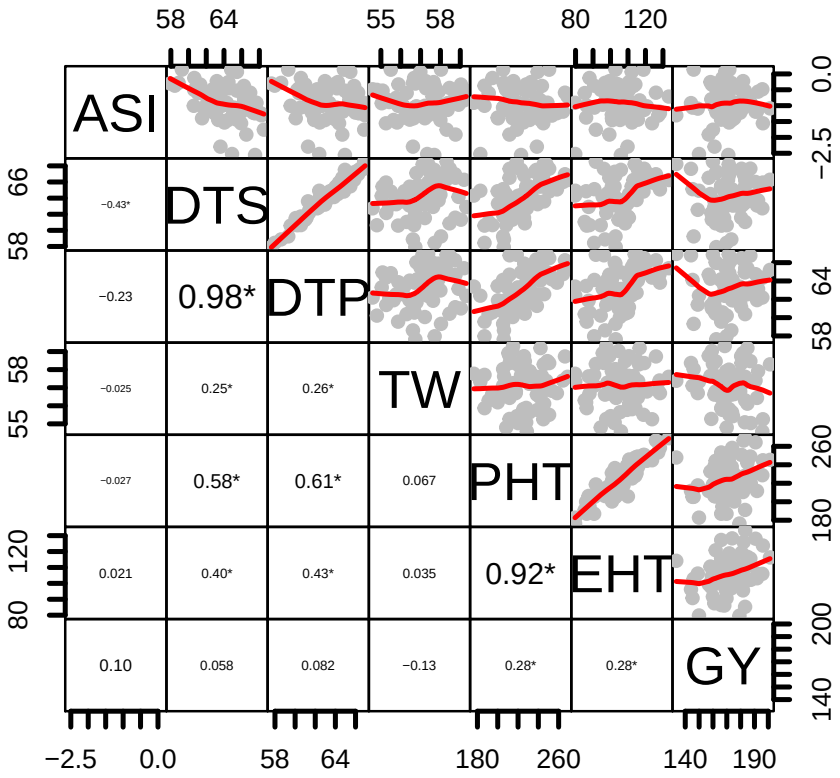

Figure 3: Correlation plot of the seven traits

The Tufte-LaTeX [2] document classes define a style similar to the style Edward Tufte uses in his books and handouts. Tufte's style is known for its extensive use of sidenotes, tight integration of graphics with text, and well-set typography.

[2] `https://code.google.com/p/tufte-latex/`

Headings

This style provides a- and b-heads (that is, # and ##), demonstrated above. An error is emitted if you try to use ### and smaller headings.

In his later books[3], Tufte starts each section with a bit of vertical space, a non-indented paragraph, and sets the first few words of the sentence in small caps. To accomplish this using this style, use the `\newthought` command as demonstrated at the beginning of this paragraph.

[3] `http://www.edwardtufte.com/tufte/books_be`

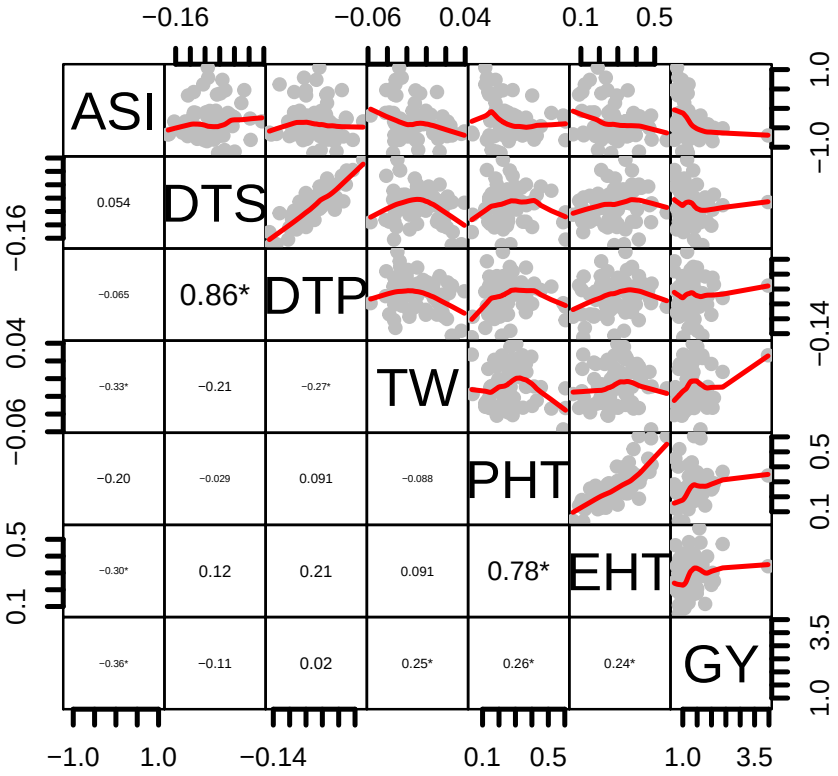

Figure 4: Correlation plot of the seven traits

Figures

Margin Figures

Images and graphics play an integral role in Tufte's work. To place figures or tables in the margin you can use the `fig.margin` knitr chunk option. For example:

Note the use of the `fig.cap` chunk option to provide a figure caption. You can adjust the proportions of figures using the `fig.width` and `fig.height` chunk options. These are specified in inches, and will be automatically scaled down to fit within the handout margin.

Equations

You can also include LaTeX equations in the margin by explicitly invoking the `marginfigure` environment.

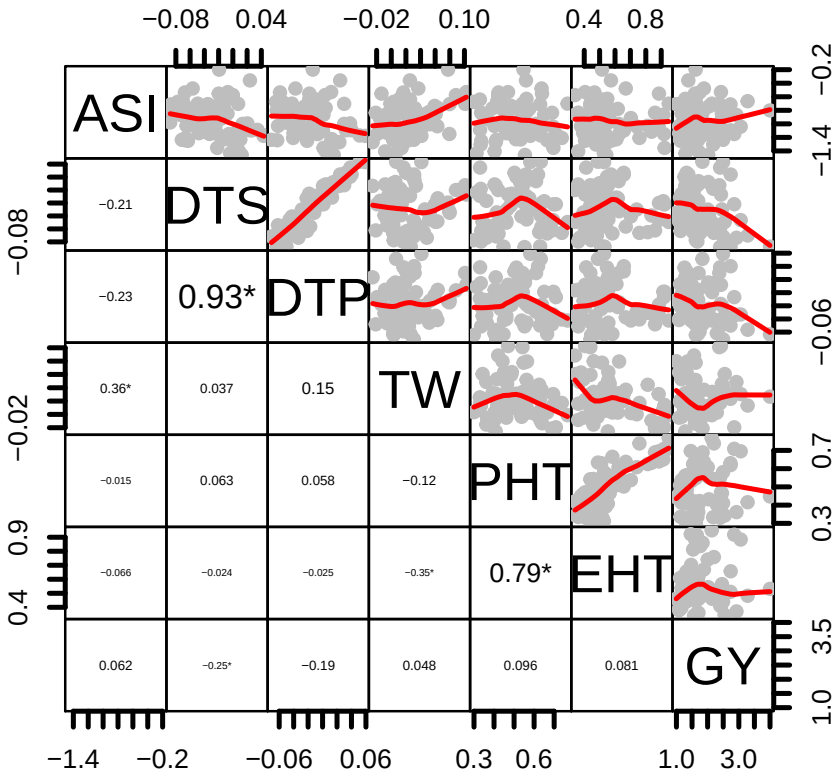

Figure 5: pMPH

Note the use of the `\caption` command to add additional text below the equation.

$$\frac{d}{dx}\left(\int_0^x f(u)\,du\right) = f(x).$$

Figure 6: An equation

Full Width Figures

You can arrange for figures to span across the entire page by using the `fig.fullwidth` chunk option.

Note the use of the `fig.width` and `fig.height` chunk options to establish the proportions of the figure. Full width figures look much better if their height is minimized.

Main Column Figures

Besides margin and full width figures, you can of course also include figures constrained to the main column.

Sidenotes

One of the most prominent and distinctive features of this style is the extensive use of sidenotes. There is a wide margin to provide

ample room for sidenotes and small figures. Any use of a footnote will automatically be converted to a sidenote. [4]

If you'd like to place ancillary information in the margin without the sidenote mark (the superscript number), you can use the `\marginnote` command.

Note also that the two footnote references (`tufte_latex` and `books_be`, both defined below) were also included in the margin on the first page of this document.

[4] This is a sidenote that was entered using a footnote.

This is a margin note. Notice that there isn't a number preceding the note.

Tables

You can use the **xtable** package to format LaTeX tables that integrate well with the rest of the Tufte handout style. Note that it's important to set the `xtable.comment` and `xtable.booktabs` options as shown below to ensure the table is formatted correctly for inclusion in the document.

```
library(xtable)
options(xtable.comment = FALSE)
options(xtable.booktabs = TRUE)
xtable(head(mtcars[, 1:6]), caption = "First rows of mtcars")
```

	mpg	cyl	disp	hp	drat	wt
Mazda RX4	21.00	6.00	160.00	110.00	3.90	2.62
Mazda RX4 Wag	21.00	6.00	160.00	110.00	3.90	2.88
Datsun 710	22.80	4.00	108.00	93.00	3.85	2.32
Hornet 4 Drive	21.40	6.00	258.00	110.00	3.08	3.21
Hornet Sportabout	18.70	8.00	360.00	175.00	3.15	3.44
Valiant	18.10	6.00	225.00	105.00	2.76	3.46

Table 1: First rows of mtcars