Index of Lab/Tutorial 2

Notes for Exercises in Session 2

- VER:14.2+14.3; add:2.4,2.7,2.11 (add:2.1,2.5,2.6)

Outline of lab session:

- brief Minitab 17 review based on `daisy2red` data (Henrik),
- individual work/discussions on the exercises (both Minitab and Stata),
- (optional) exploration of other stats packages and/or other datasets.

Other news:

- first VHM 802 home assignment posted, due Jan 29.

Minitab Basics

- start via Programs menu,
- simple recommendations:
  - enable commands in Session window (Editor menu when in Session window),
  - use/save separate project files (`.mpj`; includes results & graphs) for each assignment/project you work on.

Data sets and files for Minitab:

- `.mtw` (worksheet, raw data), not the same as `.mpj`!,
- recommended format for transfer between software: `.csv` (comma-separated values) = data format for course.

Data transfer:

- import data into Minitab: Open Worksheet menu (many formats available); also Import menu in Stata,
- export data from Minitab: Save Worksheet As menu (many formats available); also Export menu in Stata,
- complex data transfer may use StatTransfer software (licensed, but available in epi lab (211N)),
- copy/paste of data between softwares:
  - simple to do, but always check the "new" data,
  - *not recommended* for real data management (because prone to errors and offers no documentation).

Linear (Regression) Models in Minitab 17

Choices in the `Stat-Regression` menu:

- `Fitted Line Plot` — single continuous predictor: plot with limited regression statistics + prediction curves, log-transformation and quadratic/cubic regression,
- `Regression-Fit Regression Model` — multiple regression with continuous & categorical predictors:[1] full regression analysis, with SEs and VIFs, ANOVA table (incl. lack of fit test), table of "unusual" observations, residuals and diagnostics,
  - ∗ submenu choices: Box-Cox analysis, stepwise model selection tools (next lecture), expanded tables (incl. CIs for βs), coding of categorical variables,
  - ∗ supplementary analysis choices: prediction, factorial plots (incl. interaction plots),
- `Regression-Best Subsets`: tool to guide model selection, produces overview of "best" models (no Stata equivalent).

Added features offered by General Linear Model interface[1]:

- for categorical predictors: least squares means (next lecture; select in `Options` menu) and multiple comparisons,
- random effects (discussed later in VHM 802/812 courses).

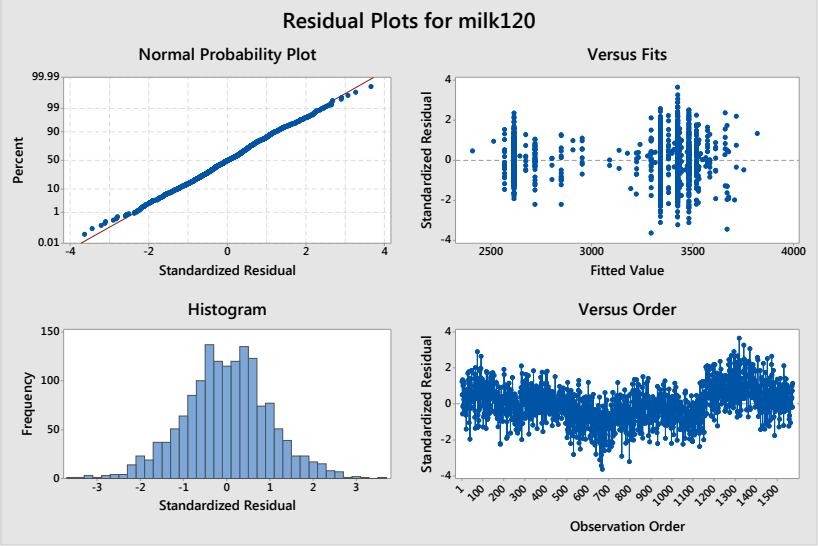
[1] A very similar interface is offered by `Stat-ANOVA-General Linear Model`.

Linear Model Checking in Minitab

Overview of features (both Regression and ANOVA menus):

- easy access to a set of residual graphs,
- residuals and diagnostics may be stored in worksheet,
- not as many additional tools (e.g. tests) as in Stata.

Example I: "Four in one" residual plots for `milk120` model with predictors: `parity,twin,dyst,rp,vag_disch`:



Example II: Residual plots for `wpc` model from VER Example 14.12: