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Notes for Exercises in Session 2

- add:2.4; VER:14.2, 14.3; add:2.6, 2.1, 2.5;

Outline of lab session:

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

Notes for exercises:

- VER:14.2-3 and add:2.6: in Minitab, the `General Reg.` menu provides the most equivalent analyses to Stata.

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 cheap in Stata graduate plan for UPEI),
- 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

Stats-Regression menu ∼ mostly strictly regression (continuous and binary predictors only!):

- `Fitted Line Plot` – single predictor:
  plot + limited regression statistics, plus prediction curves, log-transformation and quadratic/cubic regression,
- `Regression` – multiple regression:
  full regression analysis, with SEs, simple ANOVA table, table of "unusual" observations, residuals and diagnostics, prediction, VIFs,
- `General Regression` extensions: categorical predictors, parameter CIs, Box-Cox analysis, lack-of-fit tests,
- `Stepwise`: model selection by forwards/backwards procedures,
- `Best Subsets`: tool to guide model selection, produces overview of "best" models (no Stata equivalent).

Linear models with all types of predictors:
`Stata-ANOVA-General Linear Model`:

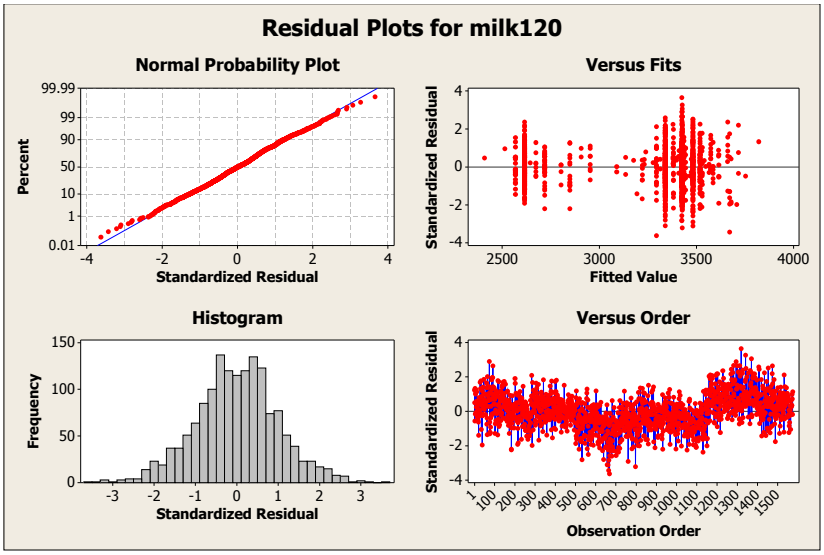
- continuous predictors must be specified as Covariates,
- ANOVA tables with entries for each predictor,
- for categorical predictors: least squares means and multiple comparisons,
- no regression-type tools (model selection, VIF etc.).

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: