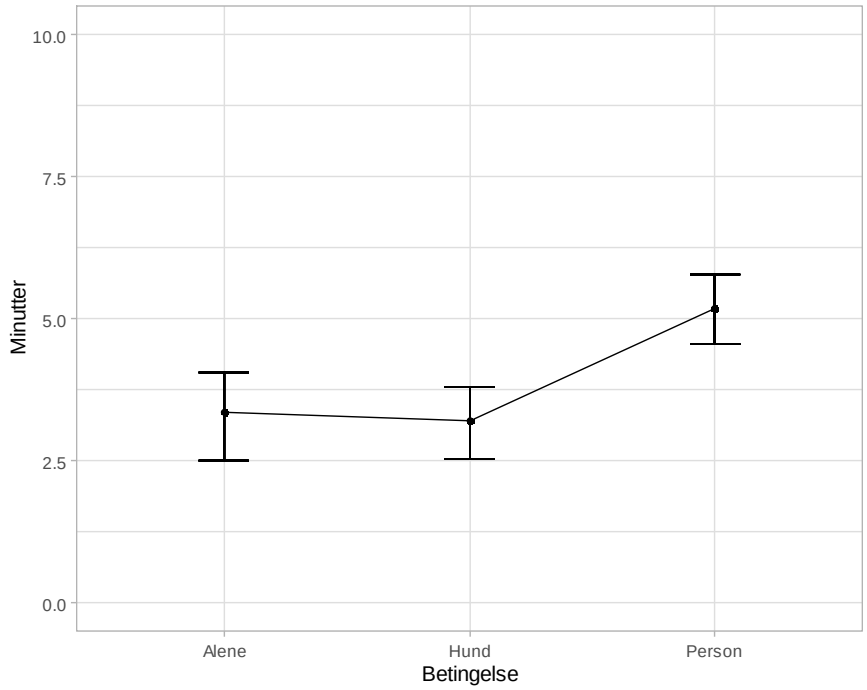
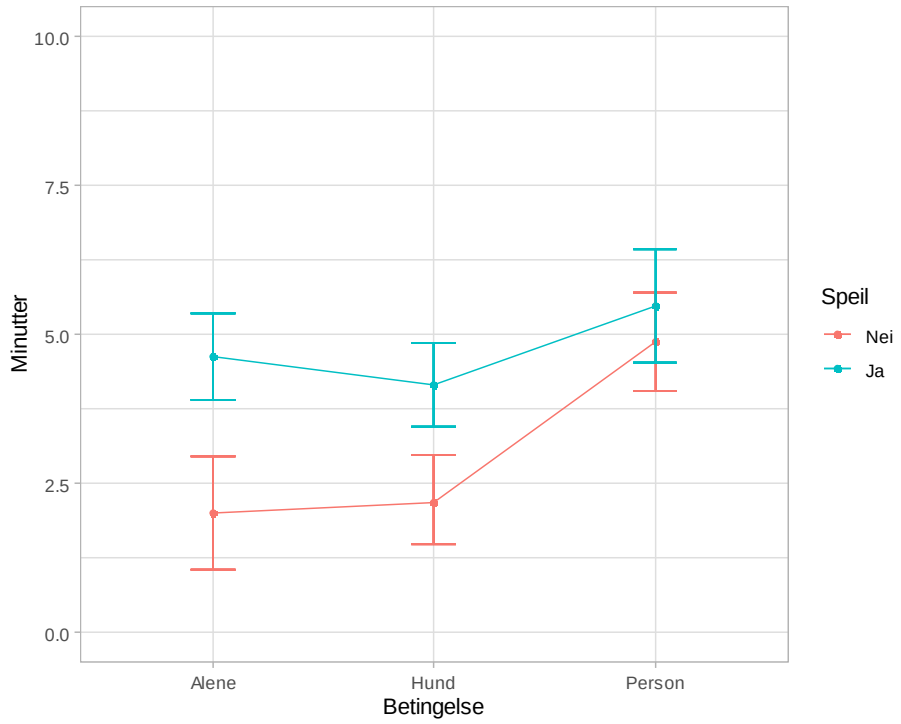
Utskrift fra enveis ANOVA




```
# ========================================================
> AOV.F1=aov(Minutter~factor(Betingelse), data=DAT)
> summary(AOV.F1)

                   Df Sum Sq Mean Sq F value   Pr(>F)
factor(Betingelse)  [redacted]  84.87  [redacted]  [redacted]  3e-05 ***
Residuals          87 313.70    3.61
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1


# ========================================================
# Regresjonsanalyse
Call:
lm(formula = Minutter ~ Dummy1 + Dummy2, data = DAT)

Residuals:
    Min      1Q  Median      3Q     Max
-4.5792 -1.3983 -0.0061  1.3810  3.8214

Coefficients:
                        Estimate Std. Error t value Pr(>|t|)
(Intercept)               3.1967     0.3467   9.221 1.59e-14 ***
factor(Betingelse)Hund   -0.1640     0.4903  -0.335 0.738746
factor(Betingelse)Person  1.9730     0.4903   4.024 0.000122 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.899 on 87 degrees of freedom
Multiple R-squared:  0.2129,  Adjusted R-squared:  0.1948
F-statistic: 11.77 on 2 and 87 DF,  p-value: 2.996e-05
```

Utskrift fra toveis ANOVA




```
# ========================================================
> AOV.F1xF2=aov(Minutter~factor(Betingelse)*factor(Speil), data=DAT)
> summary(AOV.F1xF2)

                                 Df Sum Sq Mean Sq F value   Pr(>F)
factor(Betingelse)                2  84.87   42.43  16.706 7.80e-07 ***
factor(Speil)                     1  80.30   80.30  31.612 2.41e-07 ***
factor(Betingelse):factor(Speil)  2  20.03   10.02   3.943   0.0231 *
Residuals
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1


# ========================================================
# Eta-squared
>   etaSquared(AOV.F1xF2)
                                    eta.sq
factor(Betingelse)                0.21293203
factor(Speil)                     0.20146597
factor(Betingelse):factor(Speil)  0.05026187
```

Formelark for PSY2014

Gjennomsnitt: $\bar{X} = \frac{1}{n} \sum_{i=1}^{n} X_i$

Varians: $s_X^2 = \frac{\sum_{i=1}^{n}(X_i - \bar{X})^2}{n-1}$

Standardavvik: $s_X = \sqrt{s_X^2}$

Kovarians: $s_{XY} = \frac{\sum_{i=1}^{n}(X_i - \bar{X})(Y_i - \bar{Y})}{n-1}$

Pearson Korrelasjon: $r = \frac{s_{XY}}{s_X s_Y}$

Minste kvadraters estimater i bivariat regresjon.

$\hat{b}_0 = \bar{Y} - \hat{b}_1 \cdot \bar{X}$ $\qquad$ $\hat{b}_1 = \frac{\sum_{i=1}^{n}(X_i - \bar{X}) \cdot (Y_i - \bar{Y})}{\sum_{i=1}^{n}(X_i - \bar{X})^2} = \frac{s_{XY}}{s_X^2}$

Standardfeilen til estimatet av b_1 i en bivariat regresjon. $SE(\hat{b}_1) = \frac{s}{\sqrt{\sum(X_i - \bar{X})^2}}$ $\qquad$ $s = \sqrt{\frac{\sum(Y - \hat{Y})^2}{n-p-1}}$

Standardisert regresjonskoeffisient $\beta_i = b_i \frac{s_X}{s_Y}$

Sums of squares: $\sum(Y_i - \bar{Y})^2 = \sum(\hat{Y}_i - \bar{Y})^2 + \sum(Y_i - \hat{Y}_i)^2$

r^2: $r^2 = 1 - \frac{SSE}{TSS}$ $\qquad$ $Justert\ r^2 = 1 - \frac{(n-1)(1-r^2)}{n-p-1}$

Z-skåre: $Z = \frac{X - \bar{X}}{s_X}$

F-ratio: $F = \frac{MSM}{MSE}$, er i en multippel regresjonsanalyse fordelt F(df_1=p, df_2=n-p-1) under H_0.

T-test: $t = \frac{\hat{b}_i}{SE(\hat{b}_i)}$, er i en multippel regresjonsanalyse fordelt t(df=n-p-1) under H_0.

Kji-kvadrat: $\chi^2 = \sum \frac{(O-E)^2}{E}$, fordelt $\chi^2(df = (Rader-1)(Kol-1)\ )\ under\ H_0$ $\qquad$ $E_{kol\ i,radj} = \frac{R_j \times C_i}{n}$

Enveis Anova (mellom-gruppe design):

$SS_{between}$: $SS_b = \sum_{j=1}^{g}\sum_{i=1}^{n_j}(\bar{y}_j - \bar{y})^2 = \sum_{j=1}^{g} n_j(\bar{y}_j - \bar{y})^2$ $\qquad$ $df_b = g - 1$

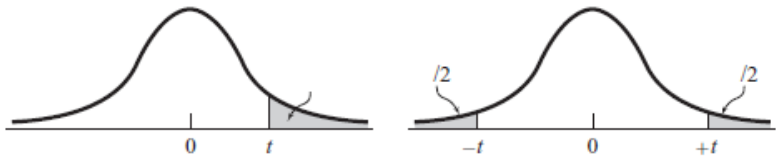
SS_{within} : $SS_w = \sum_{j=1}^{g}\sum_{i=1}^{n_j}(y_{ij} - \bar{y}_j)^2$ $\qquad$ $df_w = n - g$

For "standardfeilen" (SE) til en differanse mellom to gjennomsnitt bruker vi:

$SE_{diff} = \sqrt{\frac{2\,MSS_w}{n}}$ (der *n* er antall personer innad i hver gruppe).

$t = \frac{x_1 - x_2}{SE_{diff}}$, med frihetsgrader (df) fra MSSw

Appendix *t*: Percentage Points of the *t* Distribution



One-tailed test Two-tailed test

	Level of Significance for One-Tailed Test								
	0.25	*0.20*	*0.15*	*0.10*	*0.05*	*0.025*	*0.01*	*0.005*	*0.0005*
	Level of Significance for Two-Tailed Test								
df	*0.50*	*0.40*	*0.30*	*0.20*	*0.10*	*0.05*	*0.02*	*0.01*	*0.001*
1	1.000	1.376	1.963	3.078	6.314	12.706	31.821	63.657	636.620
2	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	31.599
3	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	12.924
4	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	8.610
5	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	6.869
6	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.959
7	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	5.408
8	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	5.041
9	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.781
10	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.587
11	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.437
12	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	4.318
13	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	4.221
14	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	4.140
15	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	4.073
16	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	4.015
17	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.965
18	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.922
19	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.883
20	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.850
21	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.819
22	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.792
23	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.768
24	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.745
25	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.725
26	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.707
27	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.690
28	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.674
29	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.659
30	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.646
40	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.551
50	0.679	0.849	1.047	1.299	1.676	2.009	2.403	2.678	3.496
100	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.390
∞	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.291

Source: The entries in this table were computed by the author.