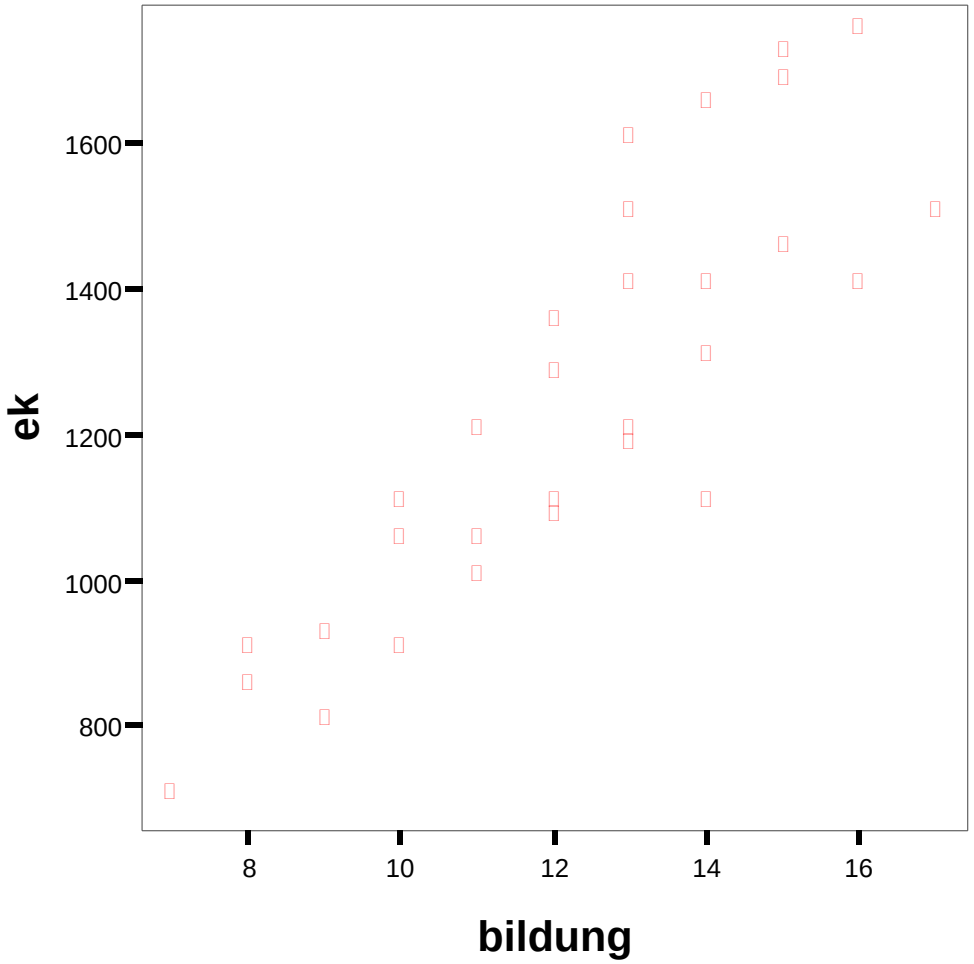
Datenmatrix (Fiktive Zahlen)

Nr	B	EK	H
1	7	700	7
2	8	900	7
3	8	850	8
4	9	920	9
5	9	800	10
6	10	1050	9
7	10	1100	11
8	10	900	10
9	11	1200	11
10	11	1000	10
11	11	1050	11
12	12	1350	10
13	12	1280	12
14	12	1100	9
15	12	1080	12

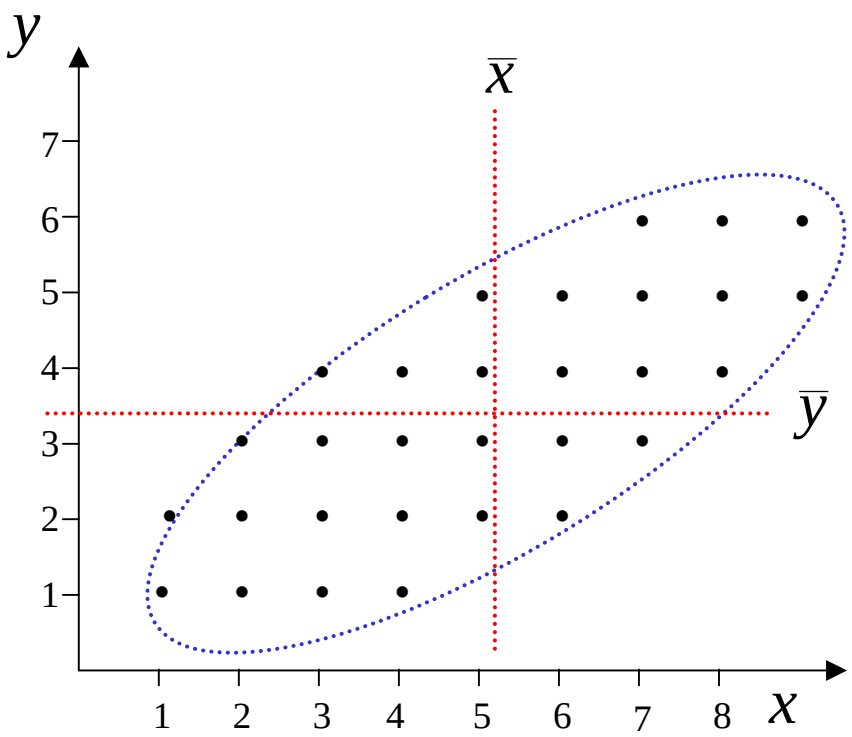
Fortsetzung

16	13	1400	11
17	13	1500	12
18	13	1600	13
19	13	1200	11
20	13	1180	13
21	14	1650	14
22	14	1100	12
23	14	1300	10
24	14	1400	13
25	15	1720	14
26	15	1680	15
27	15	1450	16
28	16	1750	13
29	16	1400	15
30	17	1500	17

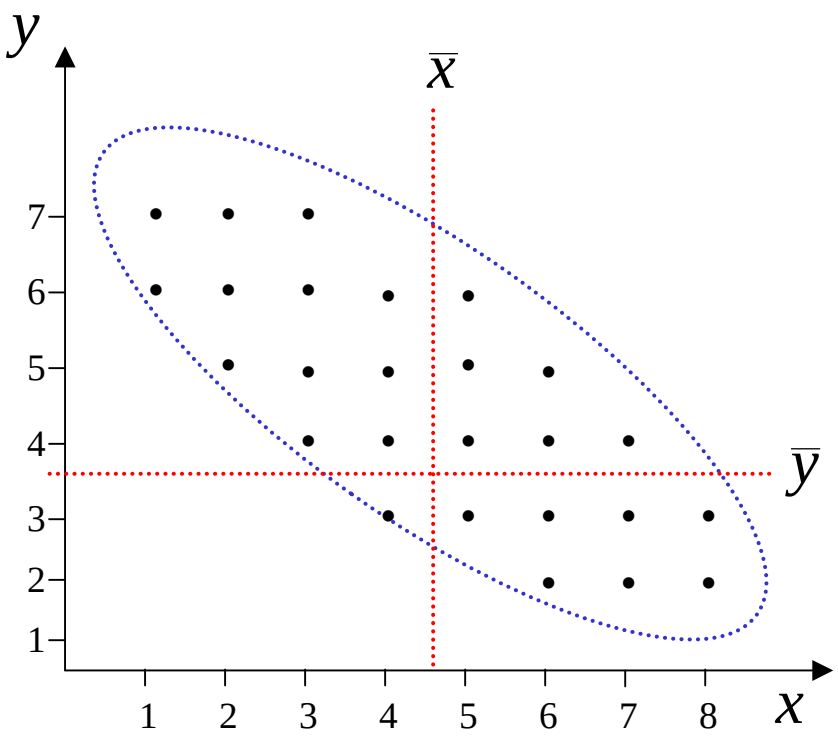
Nr Fallnummer; **B** Anzahl der Bildungsjahre;
EK Mtl. Einkommen; **H** Herkunft: Bildungsindex


ek
1600
1400
1200
1000
800
8
10
12
14
16
bildung

Positive Kovarianz



Negative Kovarianz



Kovarianz

$$s_{xy} = \frac{\sum_{i=1}^{n} (x_i - \bar{x}) \cdot (y_i - \bar{y})}{n}$$

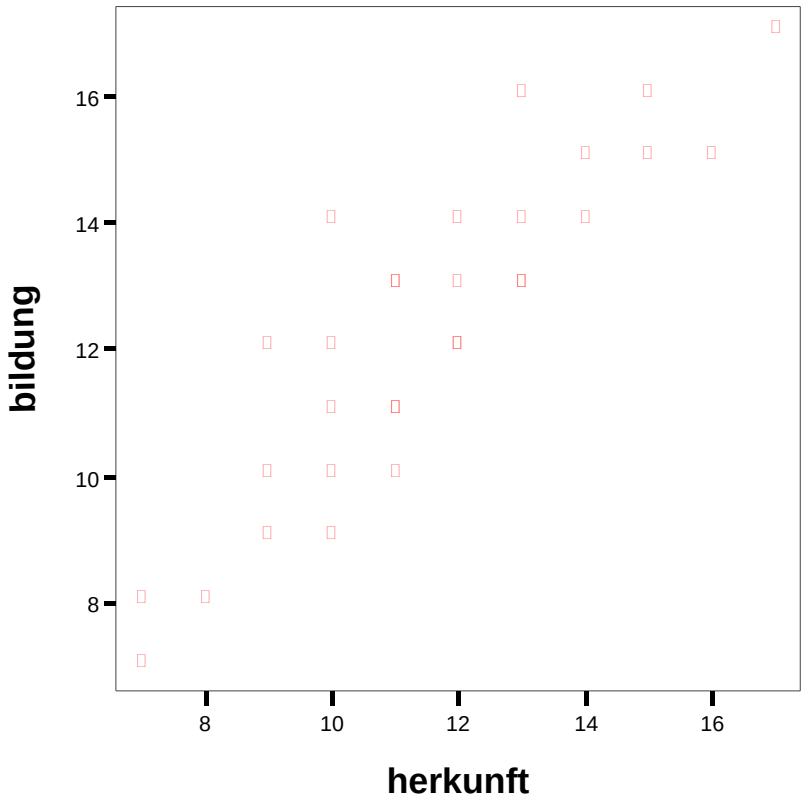
Korrelation

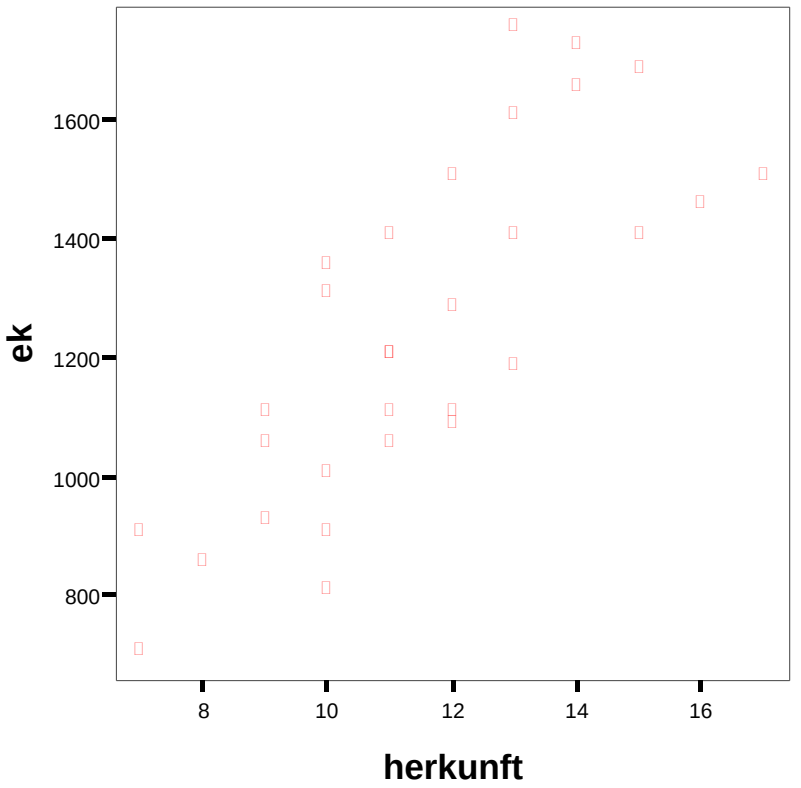
$$r = \frac{s_{xy}}{s_x \cdot s_y} \qquad -1 \leq r \leq 1$$

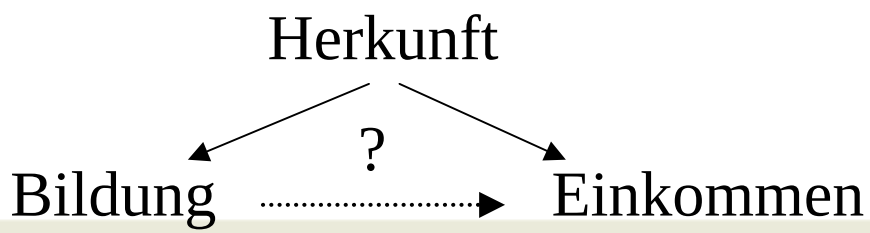
Varianz und Standardabweichung

$$s_x^2 = \frac{1}{n} \sum_{i=1}^{n} (x_i - \bar{x})^2$$

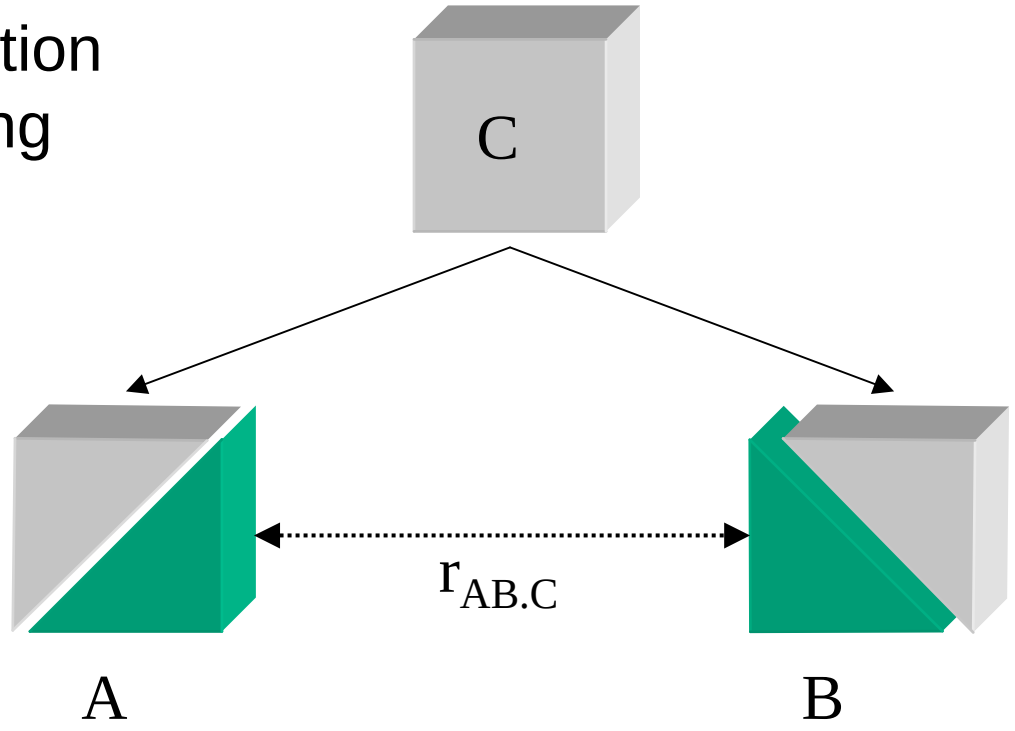
$$s_x = \sqrt{s_x^2}$$


bildung
16
14
12
10
8
8
10
12
14
16
herkunft

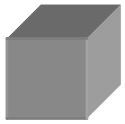

ek
1600
1400
1200
1000
800
8
10
12
14
16
herkunft


Herkunft
?
Bildung
Einkommen

Partialkorrelation erster Ordnung



Residualer Varianzanteil



Erklärter Varianzanteil

1. Einfache Regression von A auf C
2. Einfache Regression von B auf C
3. Korrelation zwischen den in Schritt 1 und 2 anfallenden Residualvariablen

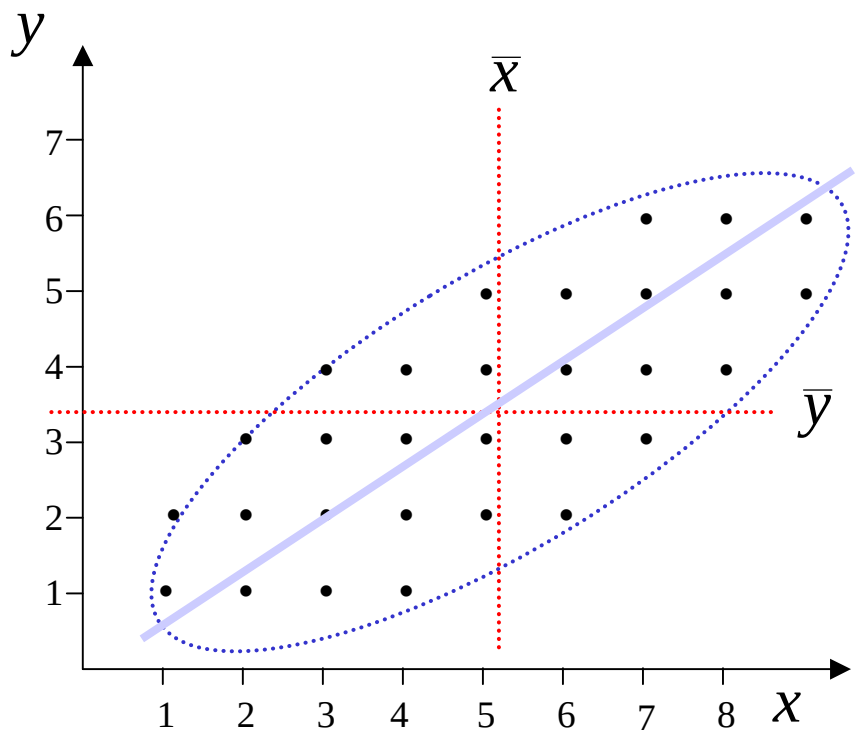


Abbildung des Zusammenhangs über eine lineare Funktion

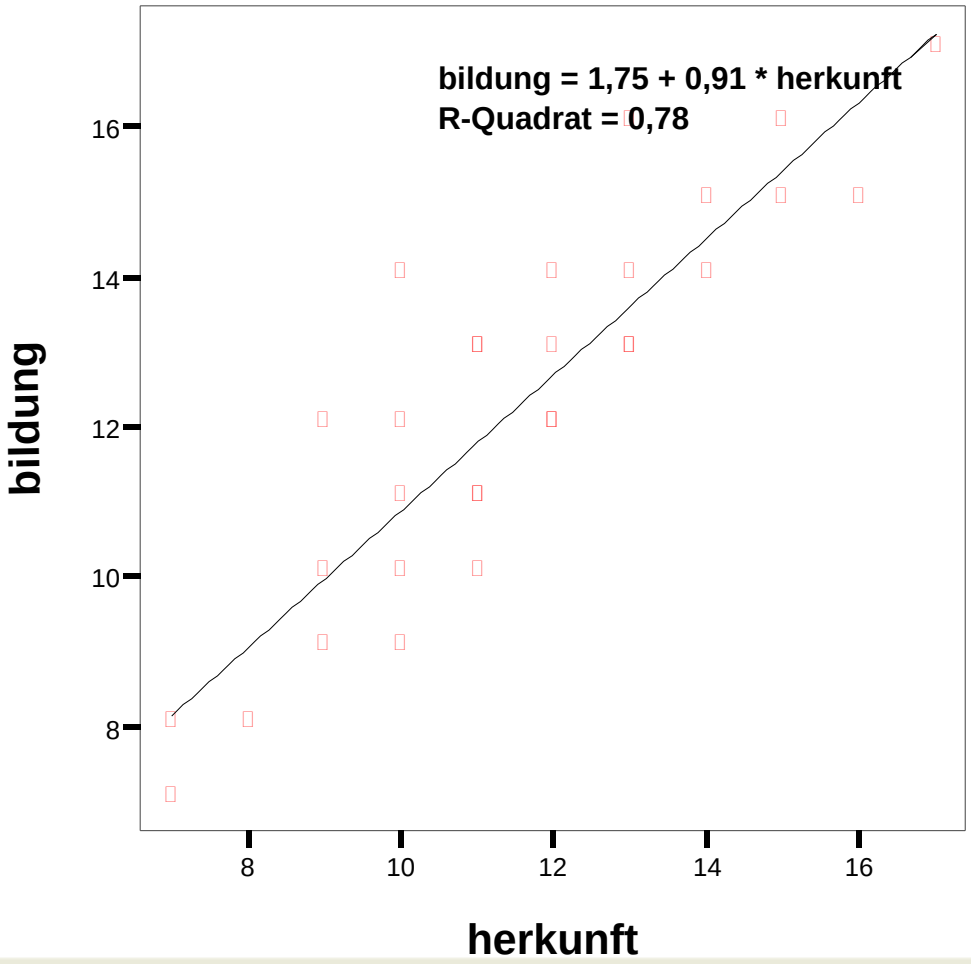
$$y_i = a + bx_i + e_i$$

$$\hat{y}_i = a + bx_i$$

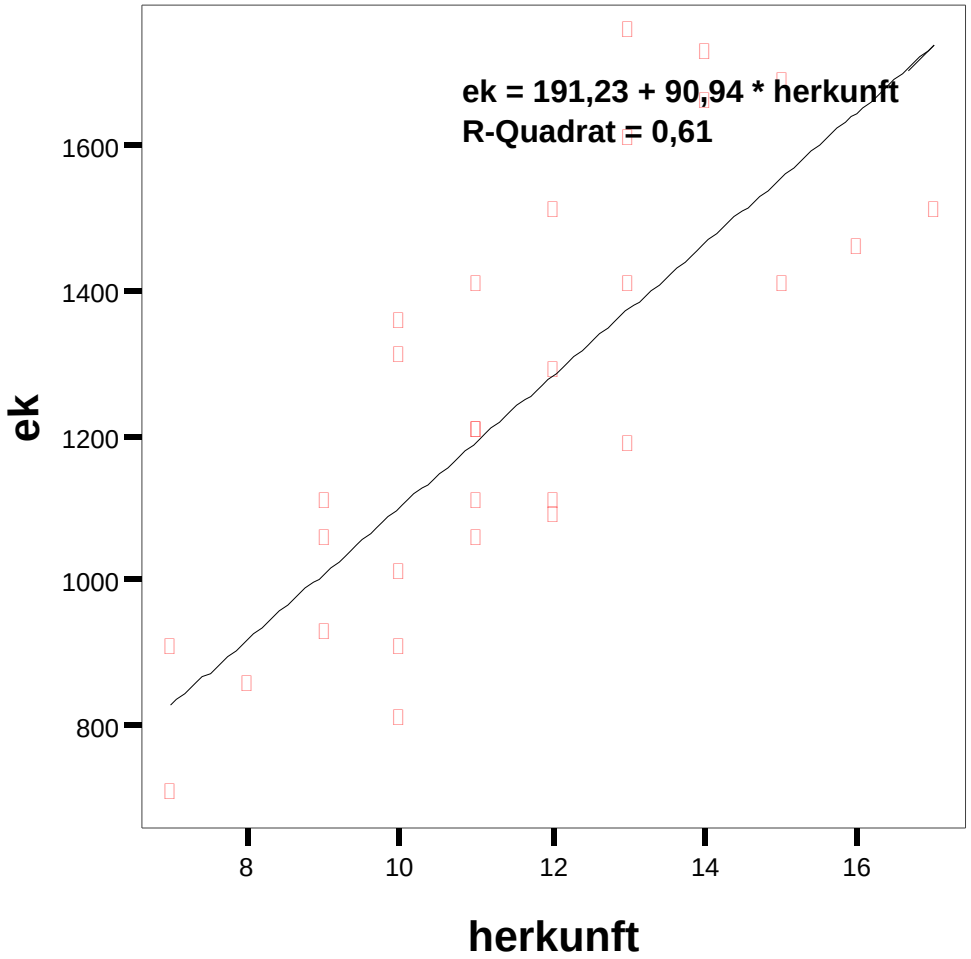
$$e_i = y_i - \hat{y}_i$$

$$b = \frac{s_{xy}}{s_x^2}$$

$$a = \bar{y} - b\bar{x}$$



Lineare Regression



Lineare Regression

SPSS:

Analysieren > Korrelation > Partiell

> Variablen [eintragen; hier = EK, BILDUNG]

> Kontrollvariable(n) [eintragen; hier = HERKUNFT]

> Optionen [hier = Korrelationen nullter Ordnung]

- P A R T I A L C O R R E L A T I O N - C O E F F I C I E N T S -

Controlling for.. HERKUNFT

	EK	BILDUNG
EK	1,0000	,5856
	(0)	(27)
	P= ,	P= ,001
BILDUNG	,5856	1,0000
	(27)	(0)
	P= ,001	P= ,

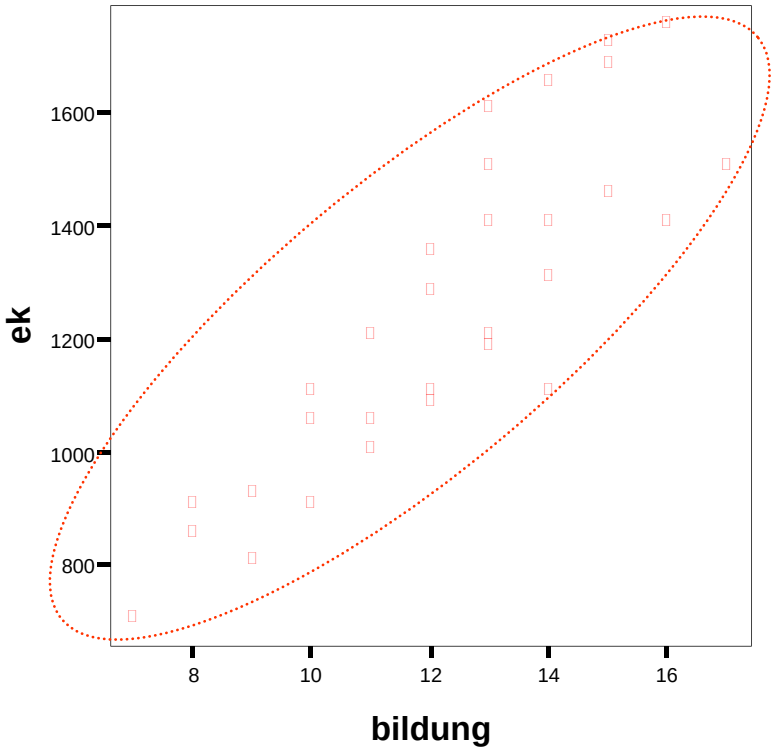
(Coefficient / (D.F.) / 2-tailed Significance)

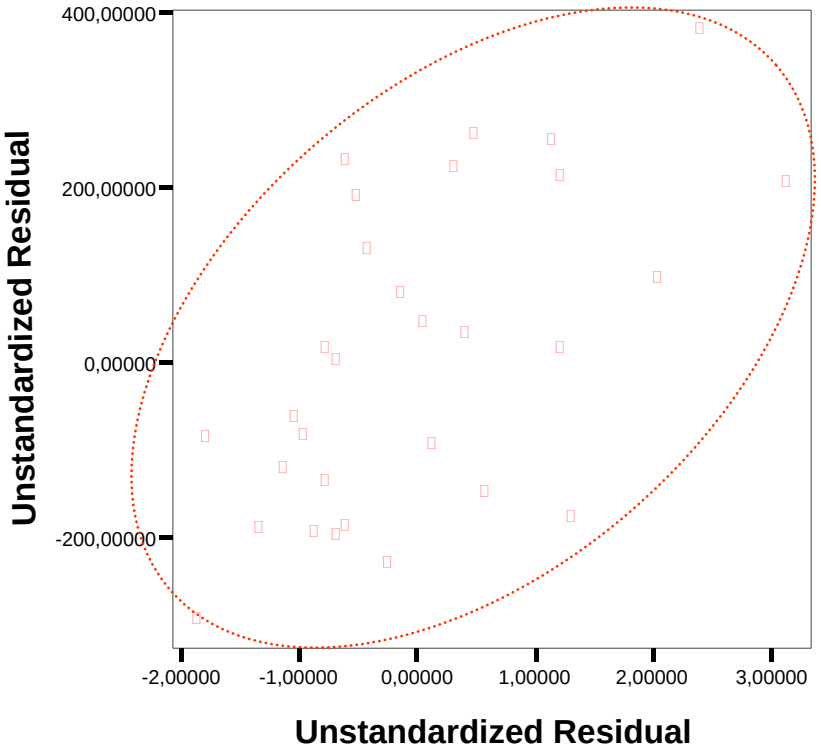
" , " is printed if a coefficient cannot be computed

Zero Order Partials

	EK	BILDUNG	HERKUNFT
EK	1,0000	,8625	,7832
	(0)	(28)	(28)
	P= ,	P= ,000	P= ,000
BILDUNG	,8625	1,0000	,8834
	(28)	(0)	(28)
	P= ,000	P= ,	P= ,000
HERKUNFT	,7832	,8834	1,0000
	(28)	(28)	(0)
	P= ,000	P= ,000	P= ,

(Coefficient / (D.F.) / 2-tailed Significance)


ek
1600
1400
1200
1000
800
8
10
12
14
16
bildung


Unstandardized Residual
400,00000
200,00000
0,00000
-200,00000
-2,00000
-1,00000
0,00000
1,00000
2,00000
3,00000
Unstandardized Residual