STATISZTIKA

$$\bar{x} = \frac{x_1 + x_2 + \ldots + x_n}{n} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

$$\bar{x} = \frac{\sum_{i=1}^{n} n_i x_i}{n}$$

$$s_{x,n-1} = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{Q_{xx}}{n-1}}$$

$$s_{\bar{x}} = \frac{s_x}{\sqrt{n}}$$

$$z = \frac{x - \mu}{\sigma}$$

$$\bar{x} \pm t_{\%} s_{\bar{x}}$$

$$\bar{x} \pm t_{\%} s_x$$

$$t_{[n-1]} = \frac{\bar{x}}{s_{\bar{x}}}$$

$$t_{[n-1]} = \frac{\bar{x} - \mu_0}{s_{\bar{x}}}$$

$$t_{[n_1+n_2-2]} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{Q_1 + Q_2}{n_1 + n_2 - 2}}} \sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

$$Q_1 = \sum_{i=1}^{n_1}(x_{1i} - \bar{x}_1)^2 \quad \text{és} \quad Q_2 = \sum_{i=1}^{n_2}(x_{2i} - \bar{x}_2)^2$$

$$F_{[n_1-1;n_2-1]} = \frac{s^2_{\text{nagyobb}}}{s^2_{\text{kisebb}}}$$

$$s_g^2 = \frac{\sum_{j=1}^{h} n_j \left(\bar{x}_j - \bar{\bar{x}}\right)^2}{h-1} = \frac{Q_g}{h-1}$$

$$s_i^2 = \frac{\sum_{j=1}^{h} Q_j}{N-h} = \frac{\sum_{j=1}^{h}\sum_{i=1}^{n_j}(x_{ij} - \bar{x}_j)^2}{N-h} = \frac{Q_i}{N-h}$$

$$t_{[n-1]} = \frac{\bar{R}}{\frac{s}{\sqrt{n}}}$$

$$Q(a,b) = \sum_{i=1}^{n}[y_i - (ax_i + b)]^2$$

$$a^* = \frac{Q_{xy}}{Q_{xx}} = \frac{s^2_{xy}}{s^2_x}$$

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

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

$$s^2_{xy} = \frac{Q_{xy}}{n-1}$$

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

$$r = \frac{Q_{xy}}{\sqrt{Q_{xx}Q_{yy}}} = \frac{s^2_{xy}}{s_x s_y}$$

$$t_{[n-2]} = r\sqrt{\frac{n-2}{1-r^2}}$$

$$\chi^2 = \sum_i \frac{(O_i - E_i)^2}{E_i}$$

$$\chi^2_{[1]} = \frac{n(ad-bc)^2}{(a+b)(c+d)(a+c)(b+d)}$$

$$\log(a \cdot b) = \log a + \log b$$

$$\log\left(\frac{a}{b}\right) = \log a - \log b$$

$$\log a^b = b \cdot \log a$$

$$H = p\log_2\left(\frac{1}{p}\right)$$

$$I = \log_2\left(\frac{1}{p}\right)$$

$$p(A) = \frac{k}{n}$$

$$p(AvagyB) = p(A) + p(B) - p(AésB)$$

$$p(A|B) = \frac{p(AésB)}{p(B)}$$

$$odds = \frac{p}{1-p} = \frac{p}{q}$$

$$p = \frac{odds}{1+odds}$$

logit (A)=ln(odds(A))

logit(nem A)=-logit(A)

odds(A)=$e^{\text{logit(A)}}$

$$odds(\text{nem A}) = \frac{1}{odds(A)}$$

$$\text{RR} = \frac{p(B_+|R_+)}{p(B_+|R_-)} = \frac{\frac{a}{a+b}}{\frac{c}{c+d}} = \frac{a(c+d)}{c(a+b)}$$

$$\text{OR} = \frac{\frac{p(B_+|R_+)}{p(B_-|\text{R}_+)}}{\frac{p(B_+|R_-)}{p(B_-|R_-)}} = \frac{ad}{bc}$$

$$\mu = E(\xi) = \sum_i x_i p_i$$

$$\sigma^2 = D^2(\xi) = E[(\xi - E(\xi))^2] = \sum_i \left((x_i - \mu)^2 \cdot p(x_i)\right)$$

$$\eta = \xi + k \rightarrow E(\eta) = E(\xi) + k; Var(\eta) = Var(\xi)$$

$$\eta = \xi \cdot k \rightarrow E(\eta) = E(\xi) \cdot k; Var(\eta) = Var(\xi) \cdot k^2$$

$$\eta = \xi_{norm} \cdot \omega_{norm} \rightarrow E(\eta) = E(\xi) \cdot E(\omega)$$

$$\eta = \xi + \omega \rightarrow E(\eta) = E(\xi) + E(\omega); Var(\eta) = Var(\xi) + Var(\omega)$$

, ha függetlenek

$$\eta_{E=0;Var=1} = (\xi - E(\xi)) * \frac{1}{\sqrt{Var(\xi)}} = \frac{(\xi - E(\xi))}{\sqrt{Var(\xi)}}$$

$$p(x_i) = \frac{1}{n} \quad \mu = \frac{n+1}{2} \quad \sigma^2 = \frac{n^2-1}{12}$$

$$f(x) = \begin{cases} \frac{1}{b-a}, & \text{ha } a \le x \le b \\ 0, & \text{egyébként} \end{cases}$$

$$\mu = \frac{a+b}{2} \quad \sigma^2 = \frac{(b-a)^2}{12}$$

$$p_k = \binom{n}{k} p^k (1-p)^{n-k}$$

$$\mu = np \qquad \sigma^2 = np(1-p)$$

$$p_k = \frac{\lambda^k}{k!} e^{-\lambda} \qquad \mu = \lambda \qquad \sigma^2 = \lambda$$

$$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} = N(\mu, \sigma)$$

$$\sum \frac{(x_i)^k}{n}$$

$$\sum \frac{(x_i - \mu)^k}{n}$$

$$w = \frac{beteg}{összes} = \frac{ÁN + VP}{VN + ÁP + ÁN + VP}$$

$$se = \frac{VP}{beteg} = \frac{VP}{ÁN + VP}$$

$$sp = \frac{VN}{egészséges} = \frac{VN}{VN + ÁP}$$

$$1 - se = \frac{ÁN}{beteg} = \frac{ÁN}{ÁN + VP}$$

$$1 - sp = \frac{ÁP}{egészséges} = \frac{ÁP}{VN + ÁP}$$

$$PPV = \frac{VP}{összes\ pozitív} = \frac{VP}{ÁP + VP}$$

$$NPV = \frac{VN}{összes\ negatív} = \frac{VN}{ÁN + VN}$$

$$1 - PPV = \frac{ÁP}{összes\ pozitív} = \frac{ÁP}{ÁP + VP}$$

$$1 - NPV = \frac{ÁN}{összes\ negatív} = \frac{ÁN}{ÁN + VN}$$

$$de = \frac{VP + VN}{összes} = \frac{VP + VN}{VP + ÁN + VN + ÁP}$$

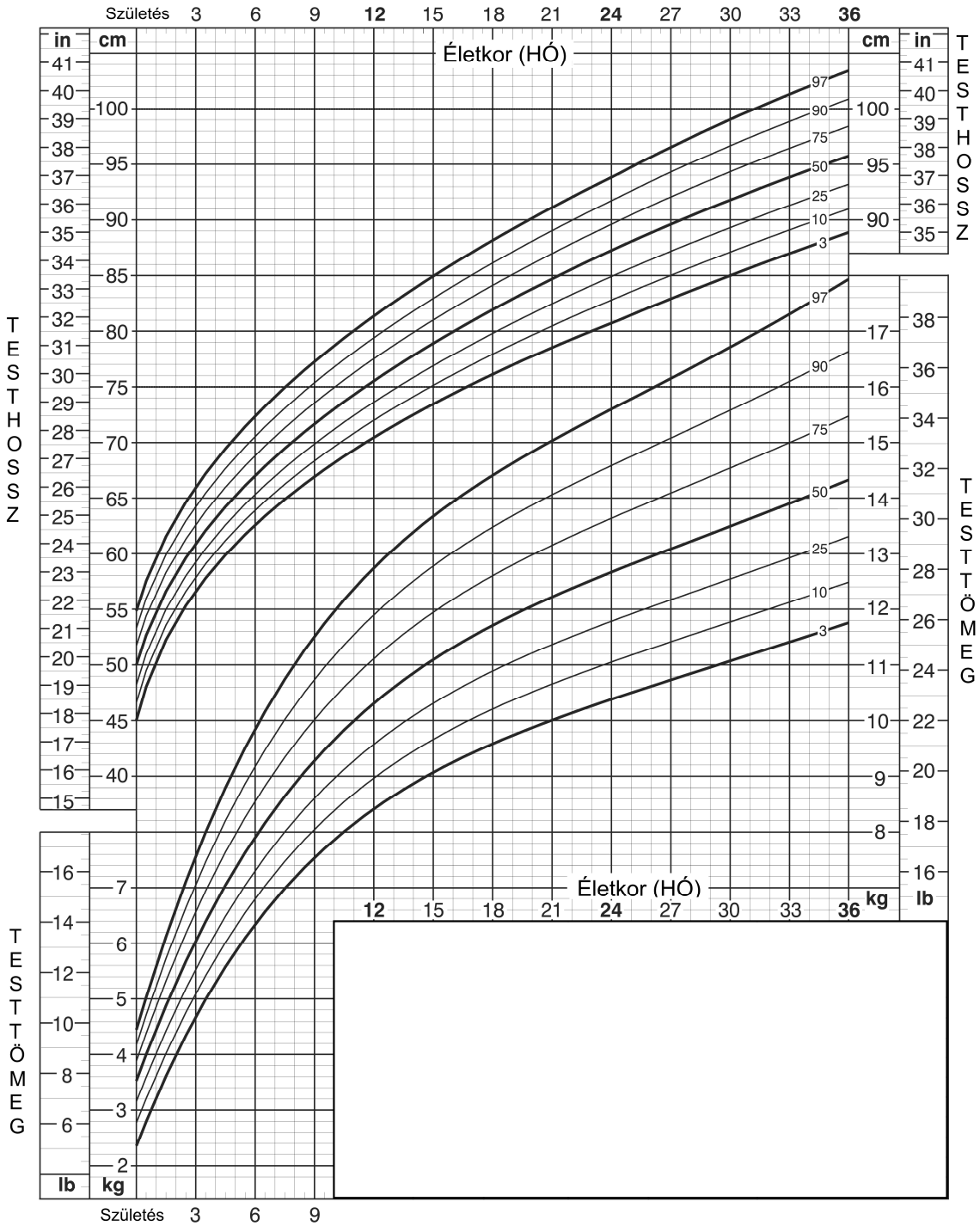
T-ELOSZLÁS

szabadságfok	*p* (valószínűség, kétszélű)							
	0,5	0,2	0,1	0,05	0,02	0,01	0,002	0,001
1	1,00	3,08	6,31	12,7	31,8	63,7	318,3	636,6
2	0,82	1,89	2,92	4,30	6,96	9,92	22,3	31,6
3	0,76	1,64	2,35	3,18	4,54	5,84	10,2	12,9
4	0,74	1,53	2,13	2,78	3,75	4,60	7,17	8,61
5	0,73	1,48	2,02	2,57	3,37	4,03	5,89	6,87
6	0,72	1,44	1,94	2,45	3,14	3,71	5,21	5,96
7	0,71	1,41	1,89	2,36	3,00	3,50	4,79	5,41
8	0,71	1,40	1,86	2,31	2,90	3,36	4,50	5,04
9	0,70	1,38	1,83	2,26	2,82	3,25	4,30	4,78
10	0,70	1,37	1,81	2,23	2,76	3,17	4,14	4,59
11	0,70	1,36	1,80	2,20	2,72	3,11	4,02	4,44
12	0,70	1,36	1,78	2,18	2,68	3,05	3,93	4,32
13	0,69	1,35	1,77	2,16	2,65	3,01	3,85	4,22
14	0,69	1,35	1,76	2,14	2,62	2,98	3,79	4,14
15	0,69	1,34	1,75	2,13	2,60	2,95	3,73	4,07
16	0,69	1,34	1,75	2,12	2,58	2,92	3,69	4,01
17	0,69	1,33	1,74	2,11	2,57	2,90	3,65	3,97
18	0,69	1,33	1,73	2,10	2,55	2,88	3,61	3,92
19	0,69	1,33	1,73	2,09	2,54	2,86	3,58	3,88
20	0,69	1,33	1,72	2,09	2,53	2,85	3,55	3,85
21	0,69	1,32	1,72	2,08	2,52	2,83	3,53	3,82
22	0,69	1,32	1,72	2,07	2,51	2,82	3,51	3,79
23	0,69	1,32	1,71	2,07	2,50	2,81	3,49	3,77
24	0,68	1,32	1,71	2,06	2,49	2,80	3,47	3,75
25	0,68	1,32	1,71	2,06	2,49	2,79	3,45	3,73
30	0,68	1,31	1,70	2,04	2,46	2,75	3,39	3,65
40	0,68	1,30	1,68	2,02	2,42	2,70	3,31	3,55
60	0,68	1,30	1,67	2,00	2,39	2,66	3,23	3,46
120	0,68	1,30	1,66	1,98	2,36	2,62	3,16	3,37
∞	0,68	1,29	1,64	1,96	2,33	2,58	3,09	3,29

χ^2 (KHI-NÉGYZET)-ELOSZLÁS

szabadságfok	*p* (valószínűség, jobbszélű)						
	0,99	0,975	0,95	0,05	0,025	0,01	0,001
1	0,0000157	0,0000982	0,000393	3,84	5,02	6,63	10,83

TESTHOSSZ- ÉS TESTTÖMEG – ÉLETKOR PERCENTILISEK; FIÚK



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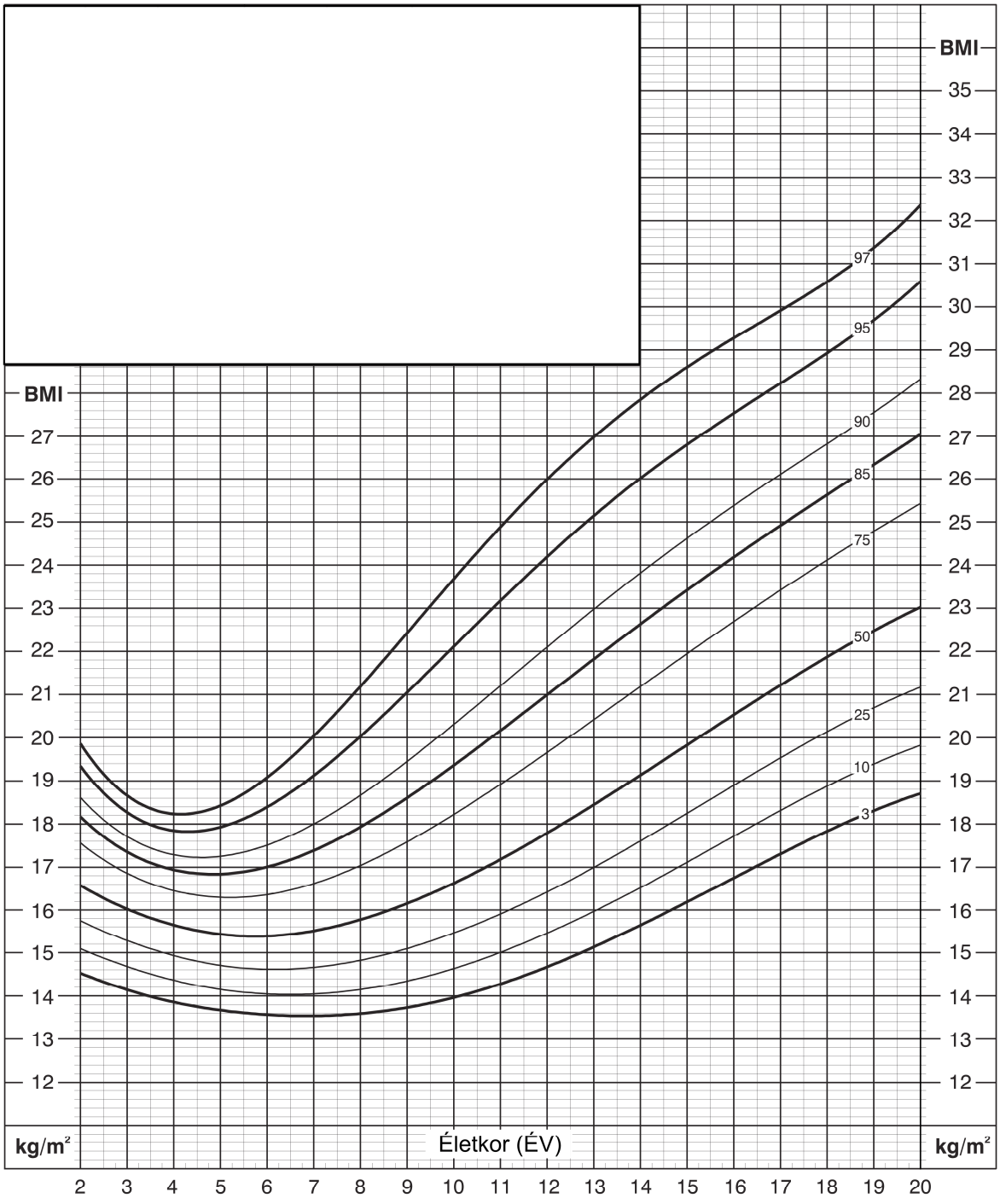

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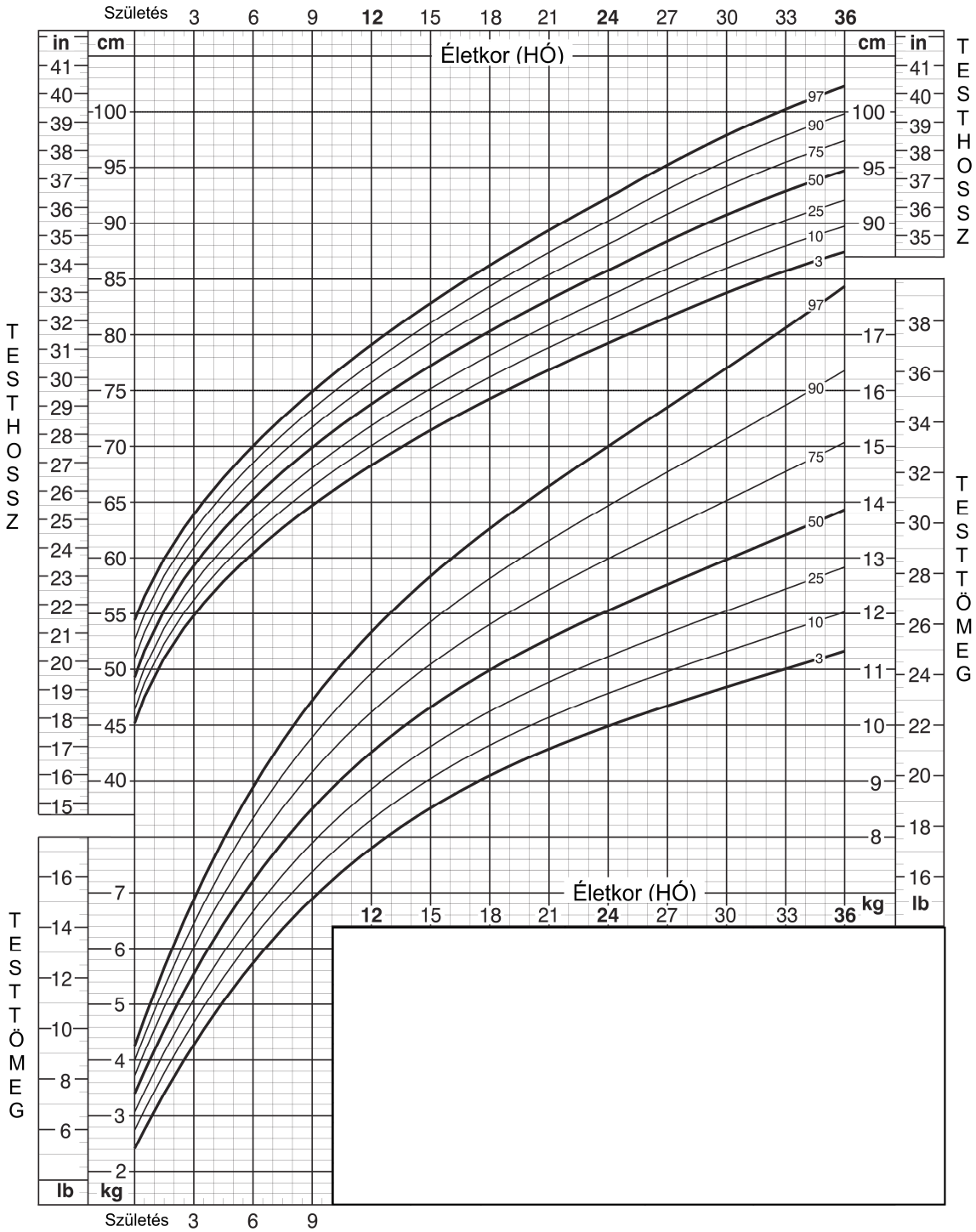

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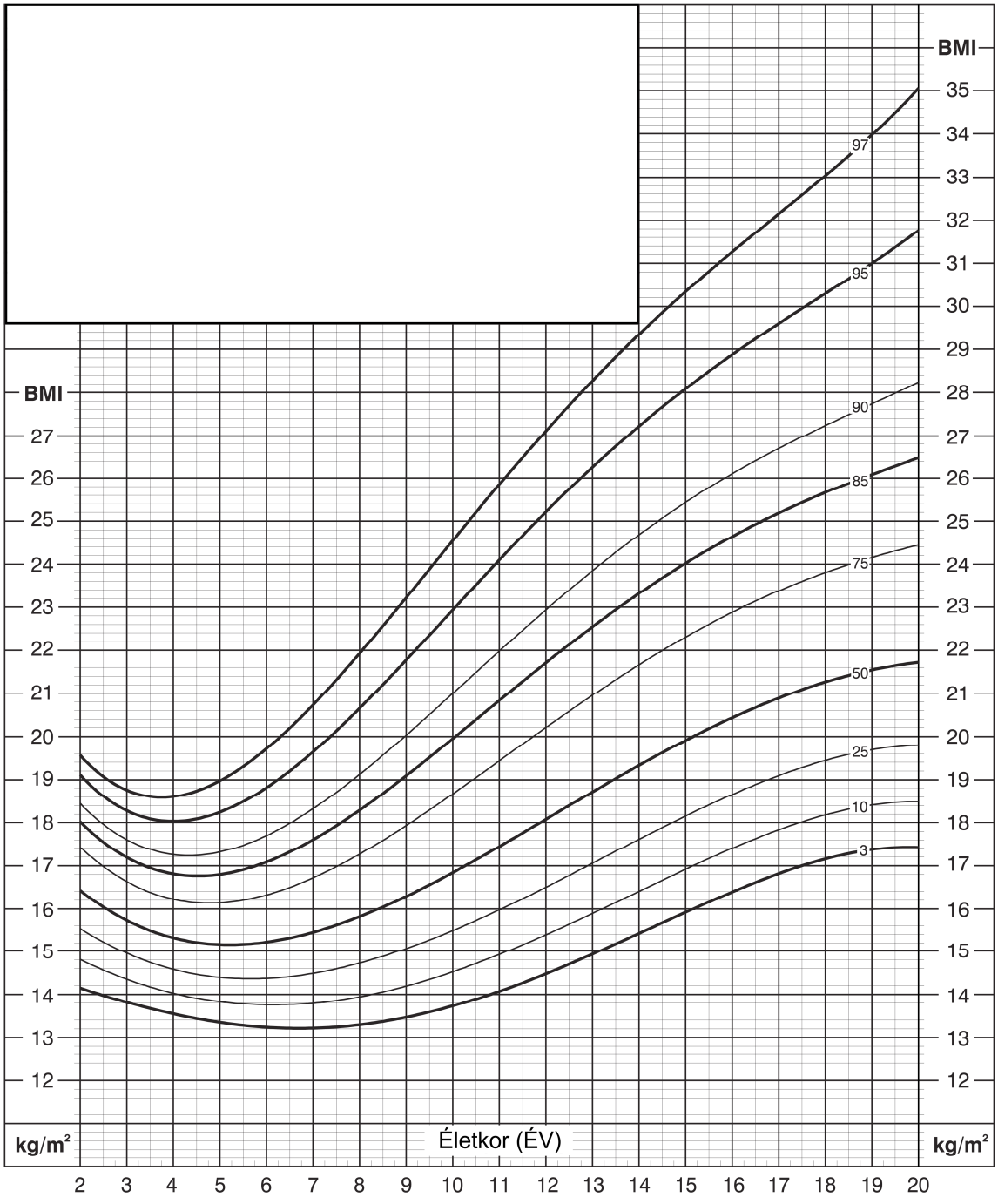

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