

Millist matemaatikat olen kasutanud sotsiaalteadustes

Astendamist

Osiste Laakso-Taagepera tingarv: $N = (\sum c_i)^2 / \sum (c_i^2)$ 40-30-20-9-1-->3.34

Kohti võitvate erakondade arv: $N_{s0} = (MS)^{1/4}$ loogiliselt

Erakondade ting arv: $N = (N_{s0})^{2/3}$

Esinduskodade suurus: $S \approx P^{1/3}$ loogiliselt

Valitsuste keskmine kestvus: $C = (42 \text{ a.}) / N_s^2$ loogiliselt

Pooled loodusseadused on $z = ax^k y^h \dots$

Logaritme -- aina

Vähemuste kahanemine: $s_i/s_j = (v_i/v_j)^b \iff s_i = v_i^b / \sum v_j^b$ kus $b = \log V / \log S$

Vähemuste paisutamine: $s_i = P_i^b / \sum P_j^b$ kus $b = [\log P / \log S][\log(S/T) / [\log(P/T)]]$

Differentsiaalvõrrandeid

Esinduskodade optimaalne suurus: $c = P/S + S + S^2/2 \rightarrow dc/dS = -P/S^2 + 1 + S$
 $dc/dS = 0 \rightarrow -P/S^2 + 1 + S = 0 \rightarrow S \approx P^{1/3}$

eksponentsiaalne kasv: $d(\ln A)/dt = k$ -- riikide suurus ja arv:

Coordinated changes over time in largest sizes and effective numbers of polities.

Resulting date for single worldwide state: +4616.

Separate best fits	Conversion exponent	Deduced A_1/A_W	Coordinated equations
$A_1/A_W = 0.020e^{0.090t}$	1	$0.020e^{0.090t}$	$A_1/A_W = 0.0191e^{0.08575t}$
$P_1/P_W = 0.126e^{0.039t}$	2	$0.0159e^{0.078t}$	$P_1/P_W = 0.138e^{0.0429t}$
$N_A = 717e^{-0.167t}$	-4/7	$0.0233e^{0.095t}$	$N_A = 1020e^{-0.1501t}$
$N_P = 33.54e^{-0.007t}$	-8/7	$0.0181e^{0.080t}$	$N_P = 31.9e^{-0.0750t}$

Maailma rahvastik kasv +400 kuni 2100

Liht-logistiline: $d(\ln P)/dt = k(1 - P/M)$

Kvasi-hüperbol: $\frac{d(\ln P)}{dt} = \frac{M}{(D-t)}$. $P_Q = \frac{38.8 \times 10^9}{(1980-t)^{0.716}}$ Toimib +400 kuni +1900

Talutsutatud k-h (Taagepera 2014): $\frac{P_T}{U} = \frac{\ln B}{[\ln(B+E)]^M}$, kus $E =$

$e^{[(D-t)/\tau]}$. $P_T \frac{3.82 \times 10^9}{[\ln(1.25+E)]^{0.716}}$, kus $E = e^{[(1980-t)/25.5]}$

Rahvastiku-kandevõime-tehnoloogia mudel:

$$\frac{d(\ln P)}{dt} = \frac{(C-P)}{\tau U} \quad C = \frac{UT^r}{(1+T^r)} \quad \frac{d(\ln T)}{dt} = \left(\frac{1}{H}\right) \left(\frac{P}{U}\right)^m \left[1 + e^{75\left(\frac{P}{U} - 0.13\right)}\right]^{-0.023}$$