

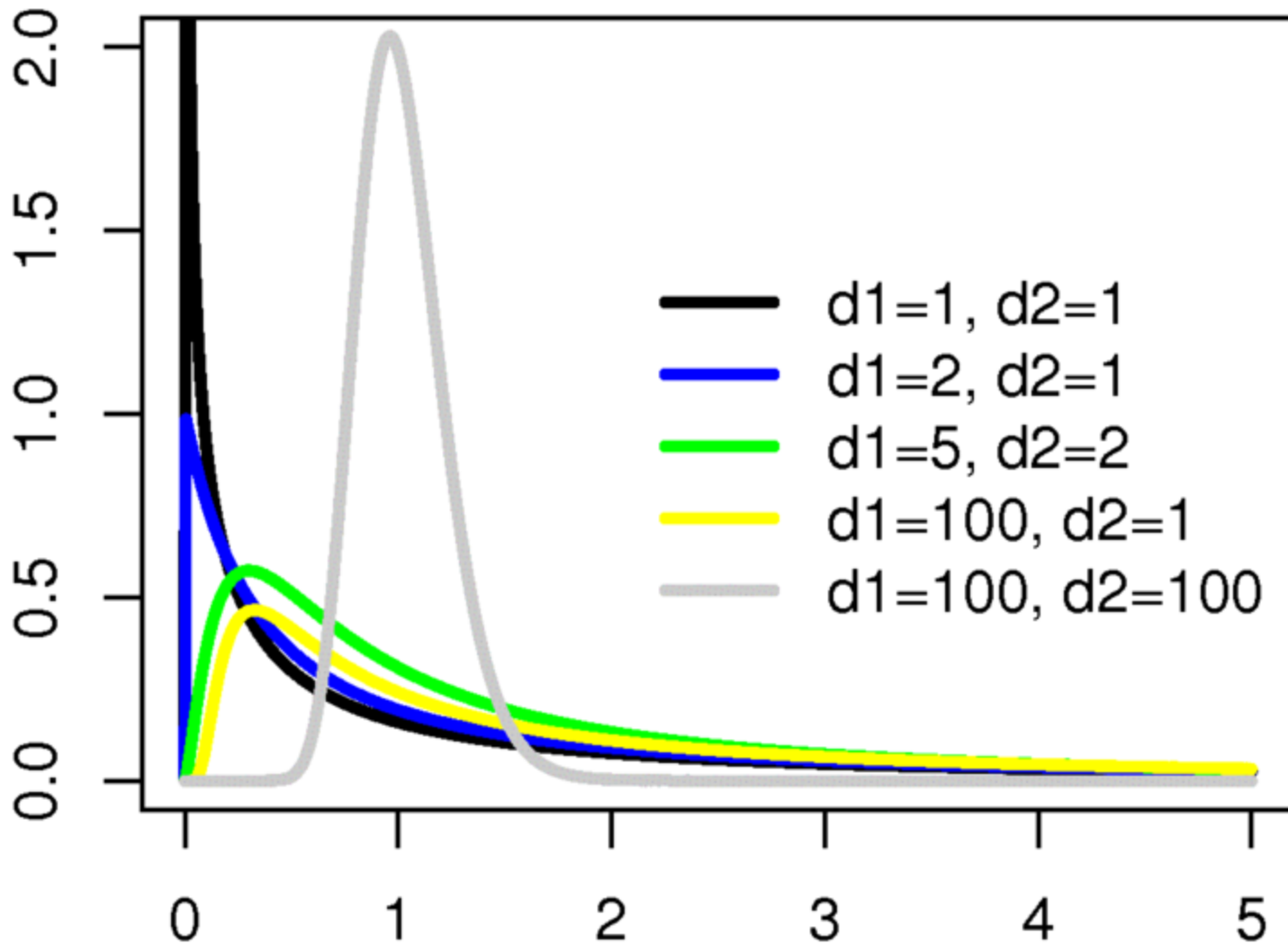
PHÉP KIỂM F

Phân tích phương sai



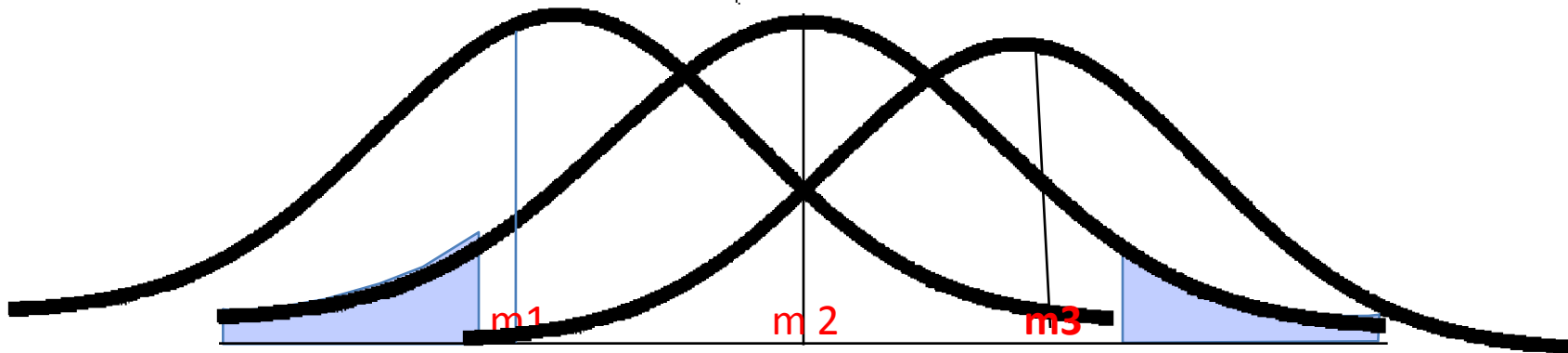
R A Fischer 1890- 1962

PHÂN PHỐI F



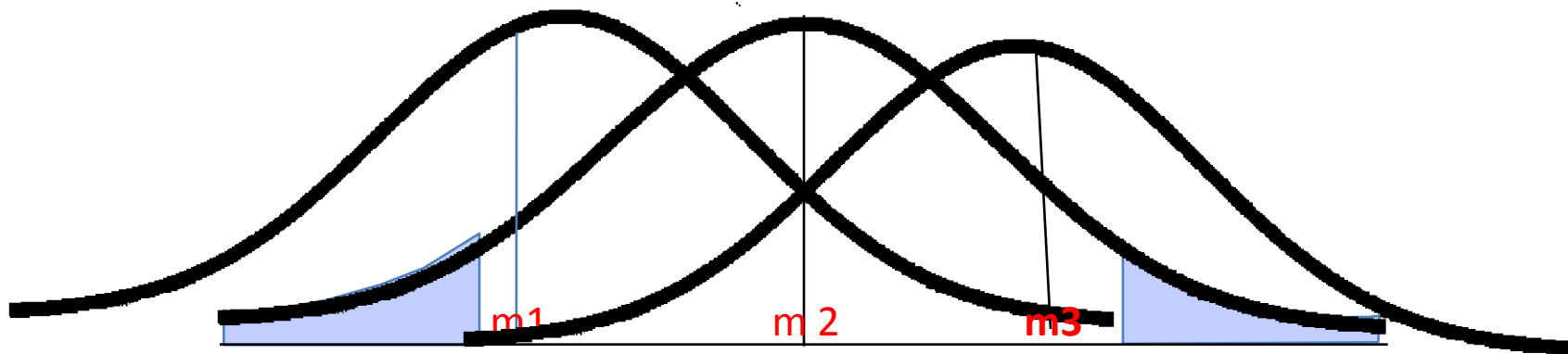
PHÉP KIỂM F

Nếu phương sai 3 phân phối gần bằng nhau
So sánh 3 trung bình: m_1, m_2, m_3



PHÉP KIỂM F

$$F = \frac{\text{Phương sai nhóm/ bậc tự do nhóm}}{\text{Phương sai mẫu/ bậc tự do mẫu}}$$



SD (n1=10) SXH (n2=10) NSV (n3=10)

150	100	140
140	130	200
170	80	210
160	70	230
90	40	100
240	30	120
100	120	220
100	130	160
120	20	150
90	80	170

**Trung bình 3 nhóm:
m= 130**

m1=140

m2=80

m3=170

Phép kiểm F

Phương sai giữa 3 nhóm:

$$10 (m_1 - m)^2 + 10 (m_2 - m)^2 + 10 (m_3 - m)^2 \\ 10 (140 - 130)^2 + 10 (80 - 130)^2 + 10 (170 - 130)^2 = 42000$$

Phương sai toàn bộ mẫu:

$$(150 - 140)^2 + (140 - 140)^2 + \dots (100 - 80)^2 + (130 - 80)^2 + \dots (140 - 170)^2 + (200 - 170)^2 = 50660$$

$$F = \frac{\text{Phương sai nhóm / bậc tự do nhóm}}{\text{Phương sai mẫu / bậc tự do mẫu}}$$

$$F = \frac{42000 / 2}{50600 / 27} = 11,2 \text{ tra bảng với DF (2,27)}$$

Ứng dụng trong SPSS

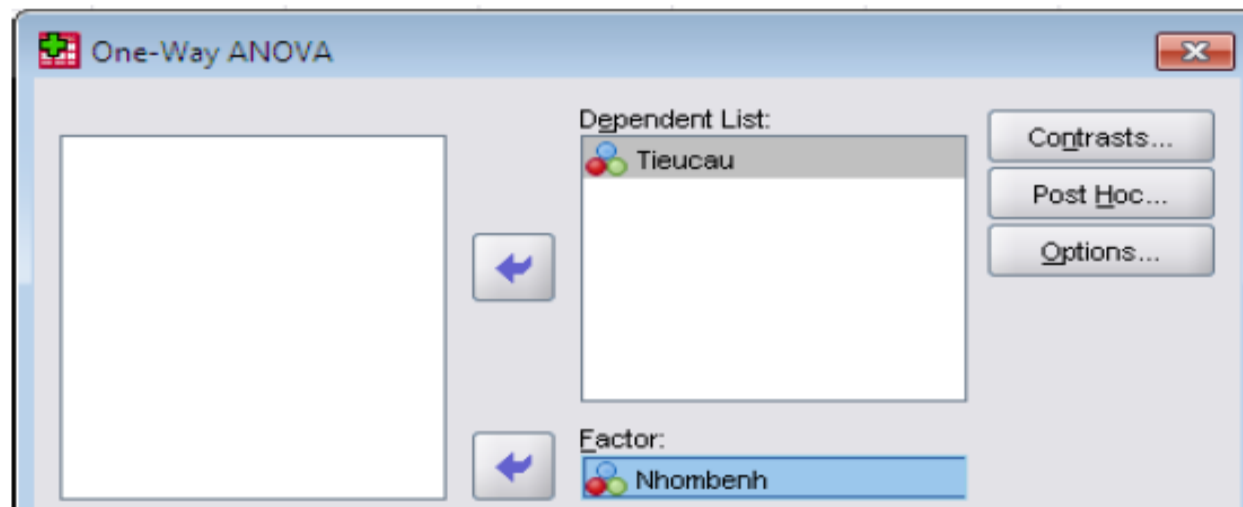
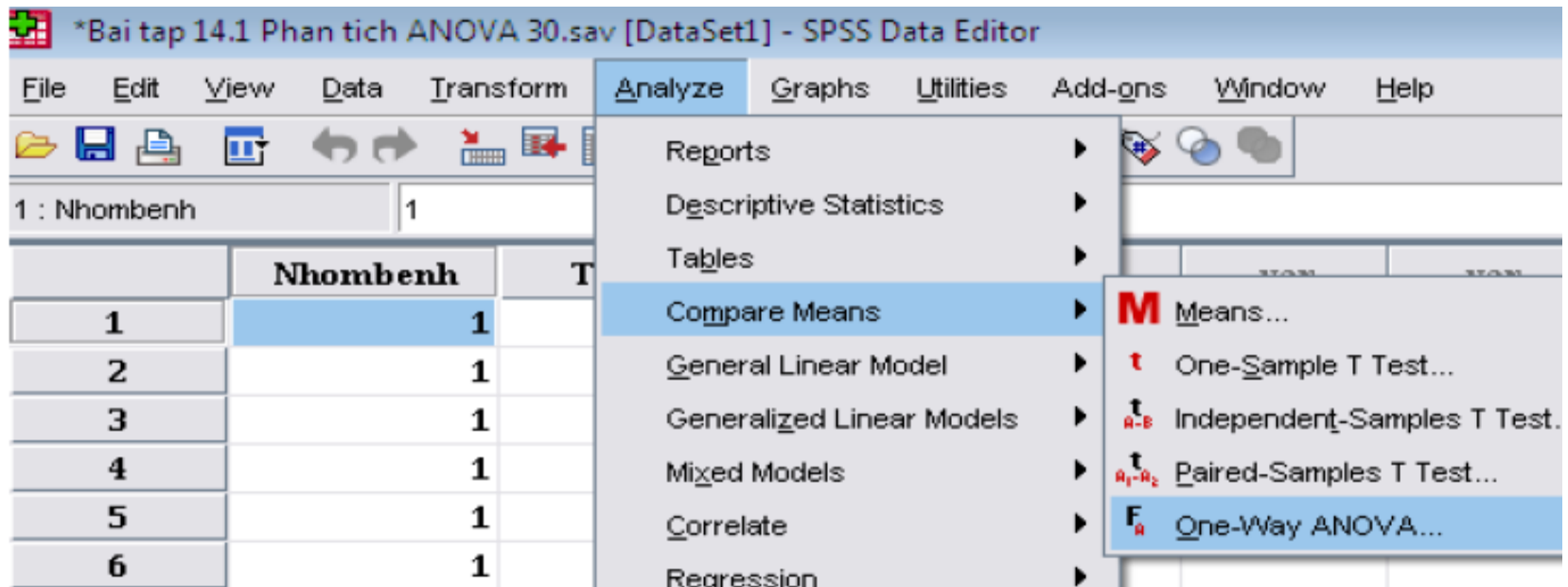
*Bai tap 14.1 Phan tich ANOVA 30.sav [DataSet1] - SPSS

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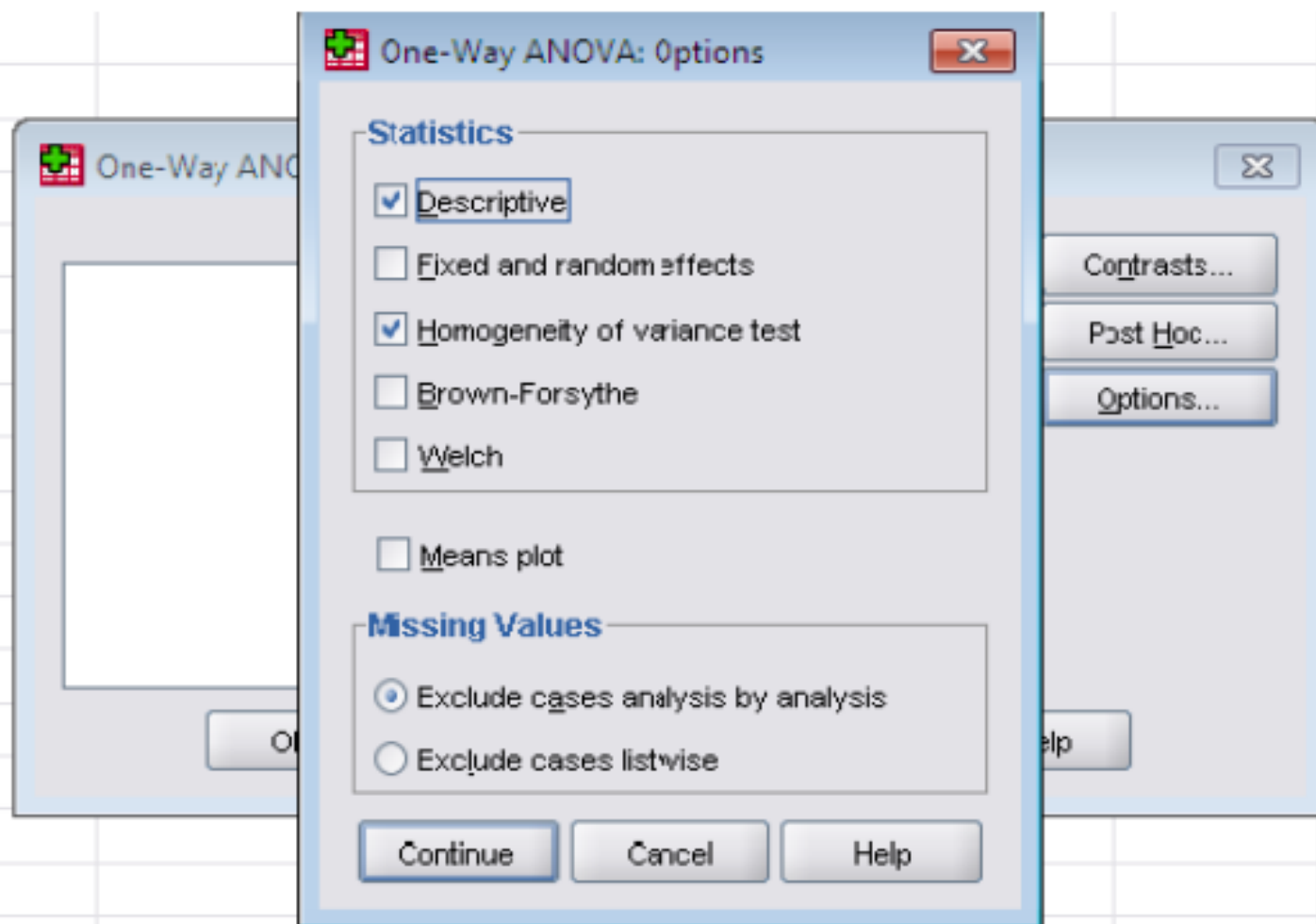
16 : Nhombenh 2

	Nhombenh	Tieucau
1	1	150
2	1	140
3	1	170
4	1	160
5	1	90
6	1	240
7	1	100
8	1	140
9	1	120
10	1	90
11	2	100
12	2	130
13	2	80
14	2	70
15	2	40
16	2	30
17	2	120
18	2	130

Ứng dụng trong SPSS



Ứng dụng trong SPSS



Ứng dụng trong SPSS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
1	10	140.0000	45.21553	14.29841	107.6548	172.3452
2	10	80.0000	40.55175	12.82359	50.9910	109.0090
3	10	170.0000	43.96969	13.90444	138.5460	201.4540
Total	30	130.0000	56.50755	10.31682	108.8997	151.1003

Test of Homogeneity of Variances

Tieu cau

Levene Statistic	df1	df2	Sig.
.084	2	27	.920

ANOVA

Tieu cau

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42000.000	2	21000.000	11.206	.000
Within Groups	50600.000	27	1874.074		
Total	92600.000	29			

Ứng dụng trong SPSS

Post Hoc Tests

Multiple Comparisons

Dependent Variable: TC

Bonferroni

(I) nhóm	(J) nhóm	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	60.00000*	19.36013	.013	10.5841	109.4159
	3	-30.00000	19.36013	.399	-79.4159	19.4159
2	1	-60.00000*	19.36013	.013	-109.4159	-10.5841
	3	-90.00000*	19.36013	.000	-139.4159	-40.5841
3	1	30.00000	19.36013	.399	-19.4159	79.4159
	2	90.00000*	19.36013	.000	40.5841	139.4159

*. The mean difference is significant at the .05 level.

Bảng phân phối F

F - Distribution ($\alpha = 0.05$ in the Right Tail)

df ₂	df ₁	Numerator Degrees of Freedom								
		1	2	3	4	5	6	7	8	9
Denominator Degrees of Freedom	1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54
	2	18.513	19.000	19.164	19.247	19.296	19.330	19.353	19.371	19.385
	3	10.128	9.5521	9.2766	9.1172	9.0135	8.9406	8.8867	8.8452	8.8123
	4	7.7086	9.9443	6.5914	6.3882	6.2561	6.1631	6.0942	6.0410	6.9988
	5	6.6079	5.7861	5.4095	5.1922	5.0503	4.9503	4.8759	4.8183	4.7725
	6	5.9874	5.1433	4.7571	4.5337	4.3874	4.2839	4.2067	4.1468	4.0990
	7	5.5914	4.7374	4.3468	4.1203	3.9715	3.8660	3.7870	3.7257	3.6767
	8	5.3177	4.4590	4.0662	3.8379	3.6875	3.5806	3.5005	3.4381	3.3881
	9	5.1174	4.2565	3.8625	3.6331	3.4817	3.3738	3.2927	3.2296	3.1789
	10	4.9646	4.1028	3.7083	3.4780	3.3258	3.2172	3.1355	3.0717	3.0204
	11	4.8443	3.9823	3.5874	3.3567	3.2039	3.0946	3.0123	2.9480	2.8962
	12	4.7472	3.8853	3.4903	3.2592	3.1059	2.9961	2.9134	2.8486	2.7964
	13	4.6672	3.8056	3.4105	3.1791	3.0254	2.9153	2.8321	2.7669	2.7144
	14	4.6001	3.7389	3.3439	3.1122	2.9582	2.8477	2.7642	2.6987	2.6458
	15	4.5431	3.6823	3.2874	3.0556	2.9013	2.7905	2.7066	2.6408	2.5876
	16	4.4940	3.6337	3.2389	3.0069	2.8524	2.7413	2.6572	2.5911	2.5377
	17	4.4513	3.5915	3.1968	2.9647	2.8100	2.6987	2.6143	2.5480	2.4943
	18	4.4139	3.5546	3.1599	2.9277	2.7729	2.6613	2.5767	2.5102	2.4563
	19	4.3807	3.5219	3.1274	2.8951	2.7401	2.6283	2.5435	2.4768	2.4227
	20	4.3512	3.4928	3.0984	2.8661	2.7109	2.5990	2.5140	2.4471	2.3928
	21	4.3248	3.4668	3.0725	2.8401	2.6848	2.5727	2.4876	2.4205	2.3660
	22	4.3009	3.4434	3.0491	2.8167	2.6613	2.5491	2.4638	2.3965	2.3419
	23	4.2793	3.4221	3.0280	2.7955	2.6400	2.5277	2.4422	2.3748	2.3201
	24	4.2597	3.4028	3.0088	2.7763	2.6207	2.5082	2.4226	2.3551	2.3002
	25	4.2417	3.3852	2.9912	2.7587	2.6030	2.4904	2.4047	2.3371	2.2821
	26	4.2252	3.3690	2.9752	2.7426	2.5868	2.4741	2.3883	2.3205	2.2655
	27	4.2100	3.3541	2.9604	2.7278	2.5719	2.4591	2.3732	2.3053	2.2501
	28	4.1960	3.3404	2.9467	2.7141	2.5581	2.4453	2.3593	2.2913	2.2360

