

Ch6

2012-10-19

T分數

若 Z 為標準常態分配

即 $\mu=0 \sigma^2=1$ 令

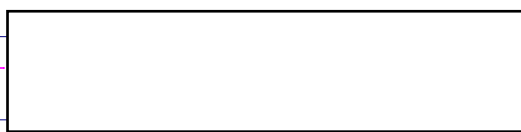
$T = 50 + 10Z$. 稱為 T 分數

(註) T 分數之平均數為 50, 標準差為 10

(註) 若 $X \sim N(\mu, \sigma^2)$ 則

$$Y = aX + b \sim N(a\mu + b, a^2\sigma^2)$$

先變成
機率



機率 $\frac{128.5}{180}$

13.1

累積

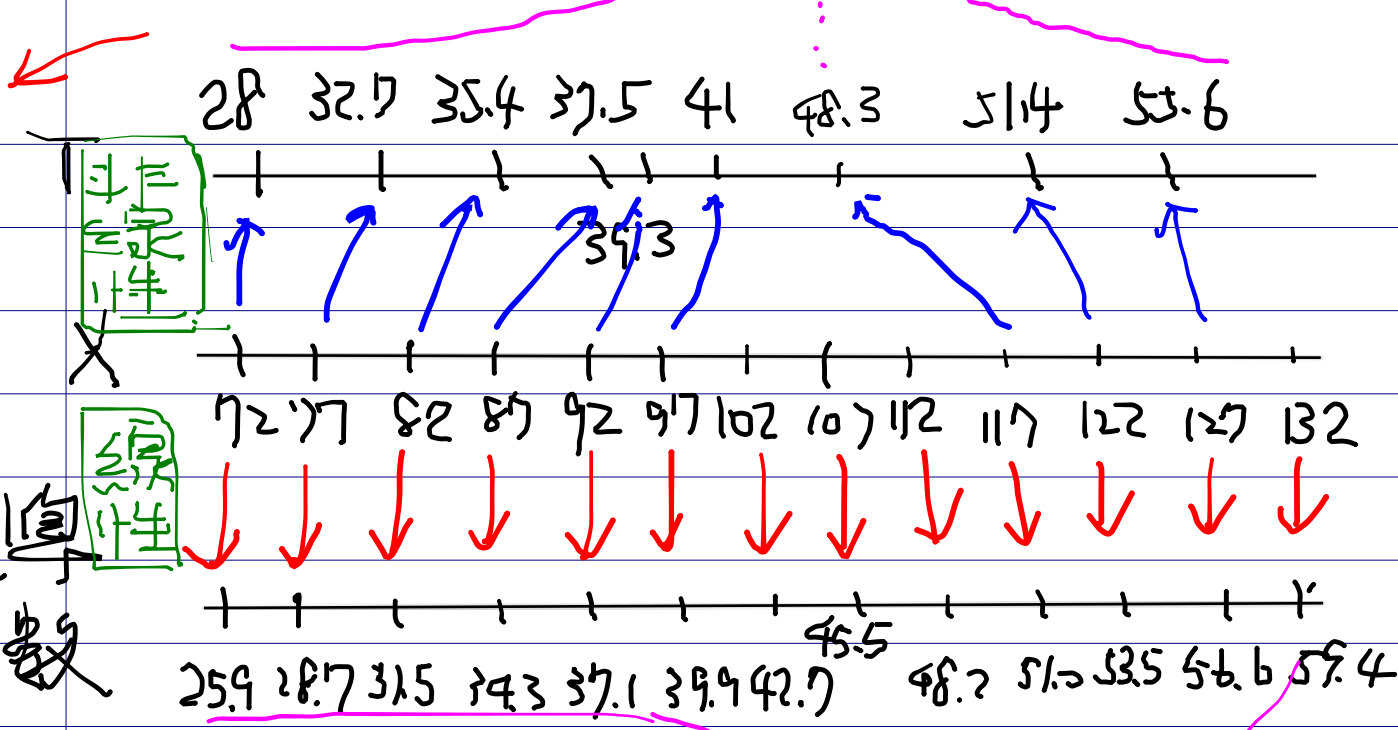
組別	X	f	Cf	Cf _中	Cp _中	Z	T
125~129	127	29	143	128.5	0.714	.56	55.6
120~124	122	28	114	100	.556	.14	51.4
80~84	82	6	16	13	.072	-1.46	35.4
75~79	77	5	10	7.5	.042	-1.73	32.7
70~74	72	5	5	2.5	.014	-2.20	28

$N=180 \quad \bar{X}=115.14 \quad S=17.91$

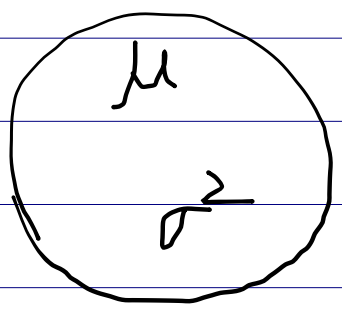
-2.20 = Z

← 0.486 ← 0.14

常態分配



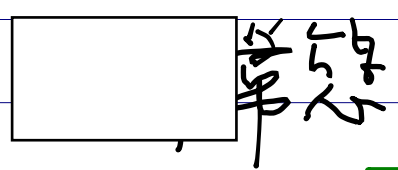
$$X \sim N(\mu, \sigma^2)$$



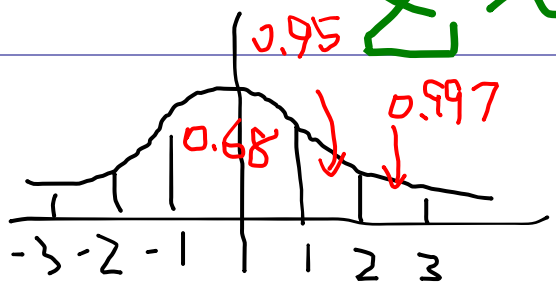
$$X \sim N(160, 25)$$

$$Y = aX + b \sim N(a\mu + b, a^2\sigma^2)$$

線性轉換後仍是常態分配



$$Z \sim N(0, 1)$$



用查表可得其他常態分配

$$13) P(X \leq 170)$$

$$= P\left(\frac{X - \mu}{\sigma} \leq \frac{170 - \mu}{\sigma}\right)$$

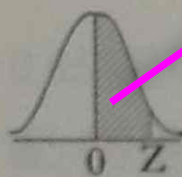
$$= P\left(\frac{X - 160}{5} \leq \frac{170 - 160}{5}\right)$$

$$= P\left(\frac{X - 160}{5} \leq 2\right)$$

$$= P(Z \leq 2)$$

Z	機率	Y	Z	機率
2.00	.4772	.0540	2.50	.4938
2.01	.4778	.0529	2.51	.4940
2.02	.4783	.0519	2.52	.4941
2.03	.4788	.0508	2.53	.4943
2.04	.4793	.0498	2.54	.4945
2.05	.4798	.0488	2.55	.4946
2.06	.4803	.0478	2.56	.4948
2.07	.4808	.0468	2.57	.4949
2.08	.4812	.0459	2.58	.4951
2.09	.4817	.0449	2.59	.4952
2.10	.4821	.0440	2.60	.4953
2.11	.4826	.0431	2.61	.4955
2.12	.4830	.0422	2.62	.4956
2.13	.4834	.0413	2.63	.4957
2.14	.4838	.0404	2.64	.4959
2.15	.4842	.0395	2.65	.4960
2.16	.4846	.0387	2.66	.4961
2.17	.4850	.0379	2.67	.4962
2.18	.4854	.0371	2.68	.4963
2.19	.4857	.0363	2.69	.4964
2.20	.4861	.0355	2.70	.4965
2.21	.4864	.0347	2.71	.4966
2.22	.4868	.0339	2.72	.4967
2.23	.4871	.0332	2.73	.4968
2.24	.4875	.0325	2.74	.4969
				.4970

444 教育及心理統計



Z	機率	Y
.00	.0000	.3989
.01	.0040	.3989
.02	.0080	.3989
.03	.0120	.3988
.04	.0160	.3986
.05	.0199	.3984
.06	.0239	.3982

$Z=1.65$ 机率 0.9
 $Z=1.96$: 0.95

95% 的信赖

高
明

1.60	4463	1092	2.10	4817	0417
1.61	4474	1074	2.11	4821	0449
1.62	4484	1057	2.12	4826	0481
1.63	4494	1040	2.13	4830	0513
1.64	4505	1023	2.14	4834	0545
1.65	4515	1006	2.15	4838	0577
1.66	4525	0989	2.16	4842	0609
1.67	4535	0973	2.17	4846	0641
1.68	4545	0957	2.18	4850	0673
1.69	4554	0940	2.19	4854	0705
1.70	4564	0925	2.20	4857	0737
1.71	4573	0909	2.21	4861	0769
1.72	4582	0893	2.22	4864	0801
1.73	4582	0878	2.23	4868	0833
1.74	4591	0863	2.24	4871	0865
1.75	4599	0848	2.25	4875	0897
1.76	4608	0833	2.26	4878	0929
1.77	4616	0818	2.27	4881	0961
1.78	4625	0804	2.28	4884	0993
1.79	4633	0790	2.29	4887	1025
1.80	4641	0775	2.30	4890	1057
1.81	4649	0761	2.31	4893	1089
1.82	4656	0748	2.32	4896	1121
1.83	4664	0734	2.33	4898	1153
1.84	4671	0721	2.34	4901	1185
1.85	4678	0707	2.35	4904	1217
1.86	4686	0694	2.36	4906	1249
1.87	4693	0681	2.37	4909	1281
1.88	4699	0669	2.38	4911	1313
1.89	4706	0656	2.39	4913	1345
1.90	4713	0644	2.40	4916	1377
1.91	4719	0632	2.41	4918	1409
1.92	4726	0620	2.42	4920	1441
1.93	4732	0608	2.43	4922	1473
1.94	4738	0596	2.44	4925	1505
1.95	4744	0584	2.45	4927	1537
1.96	4750	0573	2.46	4929	1569
1.97	4756	0562	2.47	4931	1601
1.98	4761	0551	2.48	4933	1633
1.99	4767	0540	2.49	4935	1665
2.00	4772		2.50	4938	1697

$$T = 10Z + 50 \sim N(50, 10^2)$$

因此 T 分数 = 70 就很高了
2个σ