

社統作業

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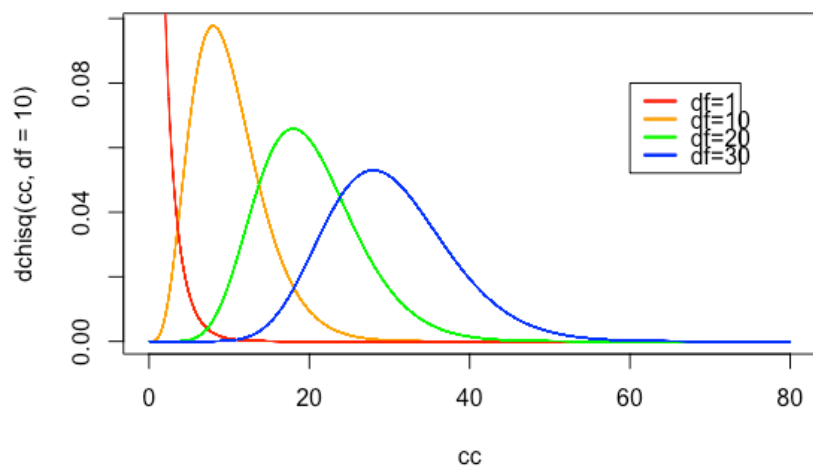
一、

1.

```
> c.99<-round(qchisq(0.99, df=c(1:30),lower.tail = F),6)
> c.98<-round(qchisq(0.98, df=c(1:30),lower.tail = F),6)
> c.95<-round(qchisq(0.95, df=c(1:30),lower.tail = F),5)
> c.90<-round(qchisq(0.90, df=c(1:30),lower.tail = F),4)
> c.80<-round(qchisq(0.80, df=c(1:30),lower.tail = F),4)
> c.70<-round(qchisq(0.70,df=c(1:30),lower.tail = F),3)
> c.50<-round(qchisq(0.50,df=c(1:30),lower.tail = F),3)
> c.30<-round(qchisq(0.30,df=c(1:30),lower.tail = F),3)
> c.20<-round(qchisq(0.20,df=c(1:30),lower.tail = F),3)
> c.10<-round(qchisq(0.10,df=c(1:30),lower.tail = F),3)
> c.05<-round(qchisq(0.05,df=c(1:30),lower.tail = F),3)
> c.02<-round(qchisq(0.02,df=c(1:30),lower.tail = F),3)
> c.01<-round(qchisq(0.01,df=c(1:30),lower.tail = F),3)
> c.001<-round(qchisq(0.001,df=c(1:30),lower.tail = F),3)
> chi_square<-data.frame(c.99,c.98,c.95,c.90,c.80,c.70,c.50,c.30,c.20,c.10,c.05,c.02,c.01,c.001)
> names(chi_square)<-
c("0.99","0.98","0.95","0.90","0.80","0.70","0.50","0.30","0.20","0.10","0.05","0.02","0.01","0.001")
> chi_square
```

	0.99	0.98	0.95	0.90	0.80	0.70	0.50	0.30	0.20	0.10
1	0.000157	0.000628	0.00393	0.0158	0.0642	0.148	0.455	1.074	1.642	2.706
2	0.020101	0.040405	0.10259	0.2107	0.4463	0.713	1.386	2.408	3.219	4.605
3	0.114832	0.184832	0.35185	0.5844	1.0052	1.424	2.366	3.665	4.642	6.251
4	0.297109	0.429398	0.71072	1.0636	1.6488	2.195	3.357	4.878	5.989	7.779
5	0.554298	0.751889	1.14548	1.6103	2.3425	3.000	4.351	6.064	7.289	9.236
6	0.872090	1.134419	1.63538	2.2041	3.0701	3.828	5.348	7.231	8.558	10.645
7	1.239042	1.564293	2.16735	2.8331	3.8223	4.671	6.346	8.383	9.803	12.017
8	1.646497	2.032477	2.73264	3.4895	4.5936	5.527	7.344	9.524	11.030	13.362
9	2.087901	2.532379	3.32511	4.1682	5.3801	6.393	8.343	10.656	12.242	14.684
10	2.558212	3.059051	3.94030	4.8652	6.1791	7.267	9.342	11.781	13.442	15.987
11	3.053484	3.608687	4.57481	5.5778	6.9887	8.148	10.341	12.899	14.631	17.275
12	3.570569	4.178287	5.22603	6.3038	7.8073	9.034	11.340	14.011	15.812	18.549
13	4.106915	4.765445	5.89186	7.0415	8.6339	9.926	12.340	15.119	16.985	19.812
14	4.660425	5.368197	6.57063	7.7895	9.4673	10.821	13.339	16.222	18.151	21.064
15	5.229349	5.984916	7.26094	8.5468	10.3070	11.721	14.339	17.322	19.311	22.307
16	5.812212	6.614237	7.96165	9.3122	11.1521	12.624	15.338	18.418	20.465	23.542
17	6.407760	7.255003	8.67176	10.0852	12.0023	13.531	16.338	19.511	21.615	24.769
18	7.014911	7.906221	9.39046	10.8649	12.8570	14.440	17.338	20.601	22.760	25.989
19	7.632730	8.567035	10.11701	11.6509	13.7158	15.352	18.338	21.689	23.900	27.204
20	8.260398	9.236699	10.85081	12.4426	14.5784	16.266	19.337	22.775	25.038	28.412
21	8.897198	9.914556	11.59131	13.2396	15.4446	17.182	20.337	23.858	26.171	29.615
22	9.542492	10.600029	12.33801	14.0415	16.3140	18.101	21.337	24.939	27.301	30.813
23	10.195716	11.292604	13.09051	14.8480	17.1865	19.021	22.337	26.018	28.429	32.007
24	10.856361	11.991822	13.84843	15.6587	18.0618	19.943	23.337	27.096	29.553	33.196
25	11.523975	12.697273	14.61141	16.4734	18.9398	20.867	24.337	28.172	30.675	34.382
26	12.198147	13.408585	15.37916	17.2919	19.8202	21.792	25.336	29.246	31.795	35.563
27	12.878504	14.125422	16.15140	18.1139	20.7030	22.719	26.336	30.319	32.912	36.741
28	13.564710	14.847481	16.92788	18.9392	21.5880	23.647	27.336	31.391	34.027	37.916
29	14.256455	15.574483	17.70837	19.7677	22.4751	24.577	28.336	32.461	35.139	39.087
30	14.953457	16.306175	18.49266	20.5992	23.3641	25.508	29.336	33.530	36.250	40.256
	0.05	0.02	0.01	0.001						
1	3.841	5.412	6.635	10.828						
2	5.991	7.824	9.210	13.816						

3	7.815	9.837	11.345	16.266
4	9.488	11.668	13.277	18.467
5	11.070	13.388	15.086	20.515
6	12.592	15.033	16.812	22.458
7	14.067	16.622	18.475	24.322
8	15.507	18.168	20.090	26.124
9	16.919	19.679	21.666	27.877
10	18.307	21.161	23.209	29.588
11	19.675	22.618	24.725	31.264
12	21.026	24.054	26.217	32.909
13	22.362	25.472	27.688	34.528
14	23.685	26.873	29.141	36.123
15	24.996	28.259	30.578	37.697
16	26.296	29.633	32.000	39.252
17	27.587	30.995	33.409	40.790
18	28.869	32.346	34.805	42.312
19	30.144	33.687	36.191	43.820
20	31.410	35.020	37.566	45.315
21	32.671	36.343	38.932	46.797
22	33.924	37.659	40.289	48.268
23	35.172	38.968	41.638	49.728
24	36.415	40.270	42.980	51.179
25	37.652	41.566	44.314	52.620
26	38.885	42.856	45.642	54.052
27	40.113	44.140	46.963	55.476
28	41.337	45.419	48.278	56.892
29	42.557	46.693	49.588	58.301
30	43.773	47.962	50.892	59.703

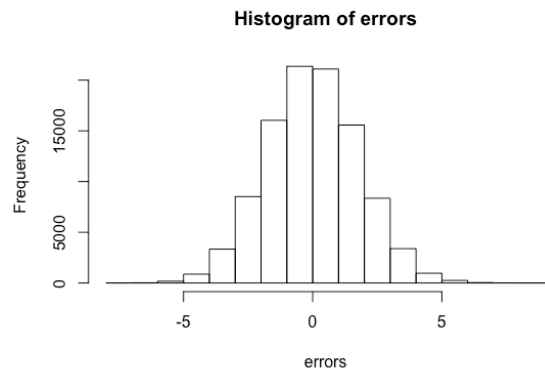


```
> cc <- seq(0,80,by=0.001)
> plot(cc,dchisq(cc,df=10),type = "l",col="orange")
> lines(cc,dchisq(cc,df=1),type = "l",col="red")
> lines(cc,dchisq(cc,df=20),type = "l",col="green")
> lines(cc,dchisq(cc,df=30),type = "l",col="blue")
> legend(60,0.08,c("df=1","df=10","df=20","df=30"),lty=
c(1,1,1,1),lwd=c(2.5,2.5,2.5,2.5),col=c("red","orange","green","blue"))
```

2.

```
> library(XLConnect)
Loading required package: XLConnectJars
XLConnect 0.2-12 by Mirai Solutions GmbH [aut],
Martin Studer [cre],
The Apache Software Foundation [ctb, cph] (Apache POI, Apache Commons
Codec),
Stephen Colebourne [ctb, cph] (Joda-Time Java library),
Graph Builder [ctb, cph] (Curvesapi Java library)
http://www.mirai-solutions.com ,
http://miraisolutions.wordpress.com
> sample1990 <- readWorksheetFromFile("/Users/angelwang/Desktop/Sample.
1990.xlsx",sheet=1,header=T)
> N<-120
> xbars <- vector(length = 100000)
> mean(sample(x=sample1990$Age,size=N,replace = T))
[1] 28.35833
> for(i in 1:100000){xbars[i]<-mean(sample(x=sample1990$Age,size=N,replace = T))}
> mu<-mean(sample1990$Age)
> errors<-xbars-mu
> hist(errors)
> mean(errors)
[1] -0.004246185
```

```
> var(errors)
[1] 3.142386
> sd(errors)
[1] 1.772678
```



```
3.
(1)alpha=0.01,N=120
> c<-vector(length = 100000)
> for (i in 1:100000) {
+   mu<-mean(sample1990$Age)
+   sample3<-sample(sample1990$Age,120,replace = T)
+   upper<-mean(sample3)+(2.58*sd(sample3)/sqrt(120))
+   lower<-mean(sample3)-(2.58*sd(sample3)/sqrt(120))
+   c[i]<-ifelse(mu<=upper&mu>=lower,"correct","wrong")}
> table(c)
c
correct wrong
98837  1163
```

```
(2)alpha=0.05,N=120
> a<-vector(length = 100000)
> for (i in 1:100000) {
+   mu<-mean(sample1990$Age)
+   sample1<-sample(sample1990$Age,120,replace = T)
+   upper<-mean(sample1)+(1.96*sd(sample1)/sqrt(120))
+   lower<-mean(sample1)-(1.96*sd(sample1)/sqrt(120))
+   a[i]<-ifelse(mu<=upper&mu>=lower,"correct","wrong")}
> table(a)
a
correct wrong
94728  5272
```

```
(3)alpha=0.05,N=600
> b<-vector(length = 100000)
> for (i in 1:100000) {
+   mu<-mean(sample1990$Age)
+   sample2<-sample(sample1990$Age,600,replace = T)
+   upper<-mean(sample2)+(1.96*sd(sample2)/sqrt(600))
+   lower<-mean(sample2)-(1.96*sd(sample2)/sqrt(600))
+   b[i]<-ifelse(mu<=upper&mu>=lower,"correct","wrong")}
> table(b)
b
correct wrong
94933  5067
```