

Demonstration of expected value and variance rules

Obs	i	a	b	mu	sig2	y	y1	y2	y3	yprime	ysum	ybar	s2
1	1	2	1	1	1	0.29475	1.23980	1.90259	-0.56497	1.58951	2.57741	0.85914	1.63089
2	2	2	1	1	1	0.70624	1.13098	1.09365	0.91878	2.41248	3.14342	1.04781	0.01283
3	3	2	1	1	1	2.82071	0.17166	0.46736	0.49111	6.64142	1.13013	0.37671	0.03167
4	4	2	1	1	1	-0.78989	2.01265	1.04905	1.55659	-0.57979	4.61829	1.53943	0.23235
5	5	2	1	1	1	0.92187	0.59460	2.91744	0.15232	2.84375	3.66436	1.22145	2.20618
6	6	2	1	1	1	-0.35107	0.23359	1.62735	3.09191	0.29787	4.95285	1.65095	2.04292
7	7	2	1	1	1	1.13893	1.04657	2.10194	1.62114	3.27786	4.76965	1.58988	0.27919
8	8	2	1	1	1	0.18554	1.33091	1.18699	0.04546	1.37108	2.56336	0.85445	0.49603
9	9	2	1	1	1	0.44294	3.05211	0.39417	0.50642	1.88588	3.95270	1.31757	2.25962
10	10	2	1	1	1	-0.16162	0.86563	-0.16061	1.04136	0.67675	1.74637	0.58212	0.42147
11	11	2	1	1	1	0.71477	0.74880	-2.10408	-0.84809	2.42953	-2.20337	-0.73446	2.04441
12	12	2	1	1	1	1.22493	1.04117	0.31984	0.63689	3.44986	1.99790	0.66597	0.13072
13	13	2	1	1	1	0.28903	2.26441	0.54959	2.80432	1.57806	5.61833	1.87278	1.38599
14	14	2	1	1	1	0.21521	0.84071	0.20087	-0.10078	1.43042	0.94080	0.31360	0.23113
15	15	2	1	1	1	0.60127	0.48286	1.23631	0.35713	2.20254	2.07631	0.69210	0.22607
16	16	2	1	1	1	1.47878	1.29160	0.58644	0.84352	3.95757	2.72156	0.90719	0.12735
17	17	2	1	1	1	1.32301	1.46569	1.93134	1.04694	3.64602	4.44396	1.48132	0.19572
18	18	2	1	1	1	1.05996	-0.23095	1.02640	1.72237	3.11991	2.51782	0.83927	0.98013
19	19	2	1	1	1	-1.20957	1.53384	1.75307	1.38270	-1.41915	4.66962	1.55654	0.03468
20	20	2	1	1	1	2.89771	0.22746	1.29005	0.68640	6.79542	2.20391	0.73464	0.28402
21	21	2	1	1	1	1.37653	1.75657	1.15209	1.03905	3.75306	3.94771	1.31590	0.14883
22	22	2	1	1	1	-0.22606	2.14416	0.50675	0.71413	0.54788	3.36504	1.12168	0.79485
23	23	2	1	1	1	1.64013	0.46267	0.77592	1.98489	4.28026	3.22348	1.07449	0.64614
24	24	2	1	1	1	2.38555	2.07285	0.93257	2.37663	5.77110	5.38204	1.79401	0.57964
25	25	2	1	1	1	0.79044	-0.84250	2.30107	-0.61303	2.58088	0.84553	0.28184	3.07111

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The UNIVARIATE Procedure
Variable: y

Moments			
N	100000	Sum Weights	100000
Mean	0.9986484	Sum Observations	99864.8395
Std Deviation	0.99562175	Variance	0.99126266
Skewness	0.00936196	Kurtosis	0.02797082
Uncorrected SS	198855.137	Corrected SS	99125.2749
Coeff Variation	99.6969254	Std Error Mean	0.00314843

Basic Statistical Measures			
Location		Variability	
Mean	0.998648	Std Deviation	0.99562
Median	0.997842	Variance	0.99126
Mode	.	Range	8.80436
		Interquartile Range	1.34689

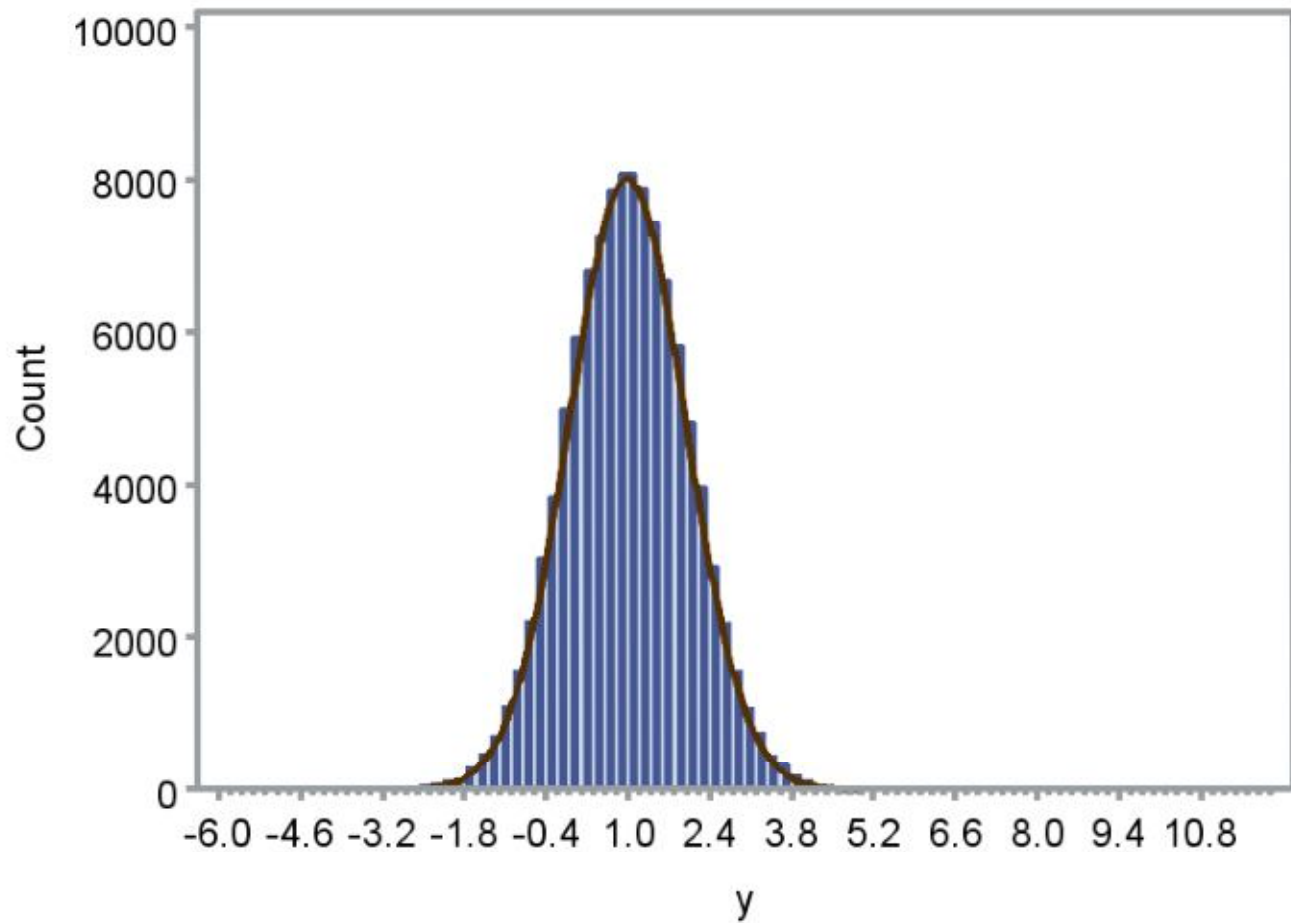
Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	317.1891	Pr > t 	<.0001
Sign	M	34254	Pr >= M 	<.0001
Signed Rank	S	2.1115E9	Pr >= S 	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	5.407799
99%	3.330441
95%	2.638622
90%	2.271341
75% Q3	1.670755
50% Median	0.997842
25% Q1	0.323868
10%	-0.273046
5%	-0.632756
1%	-1.320013
0% Min	-3.396560

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-3.39656	8424	5.15811	72177
-3.28253	12031	5.17089	82682

-3.26695	43488	5.19271	99027
-3.21337	79299	5.25631	14250
-3.20181	35718	5.40780	89700

The UNIVARIATE Procedure

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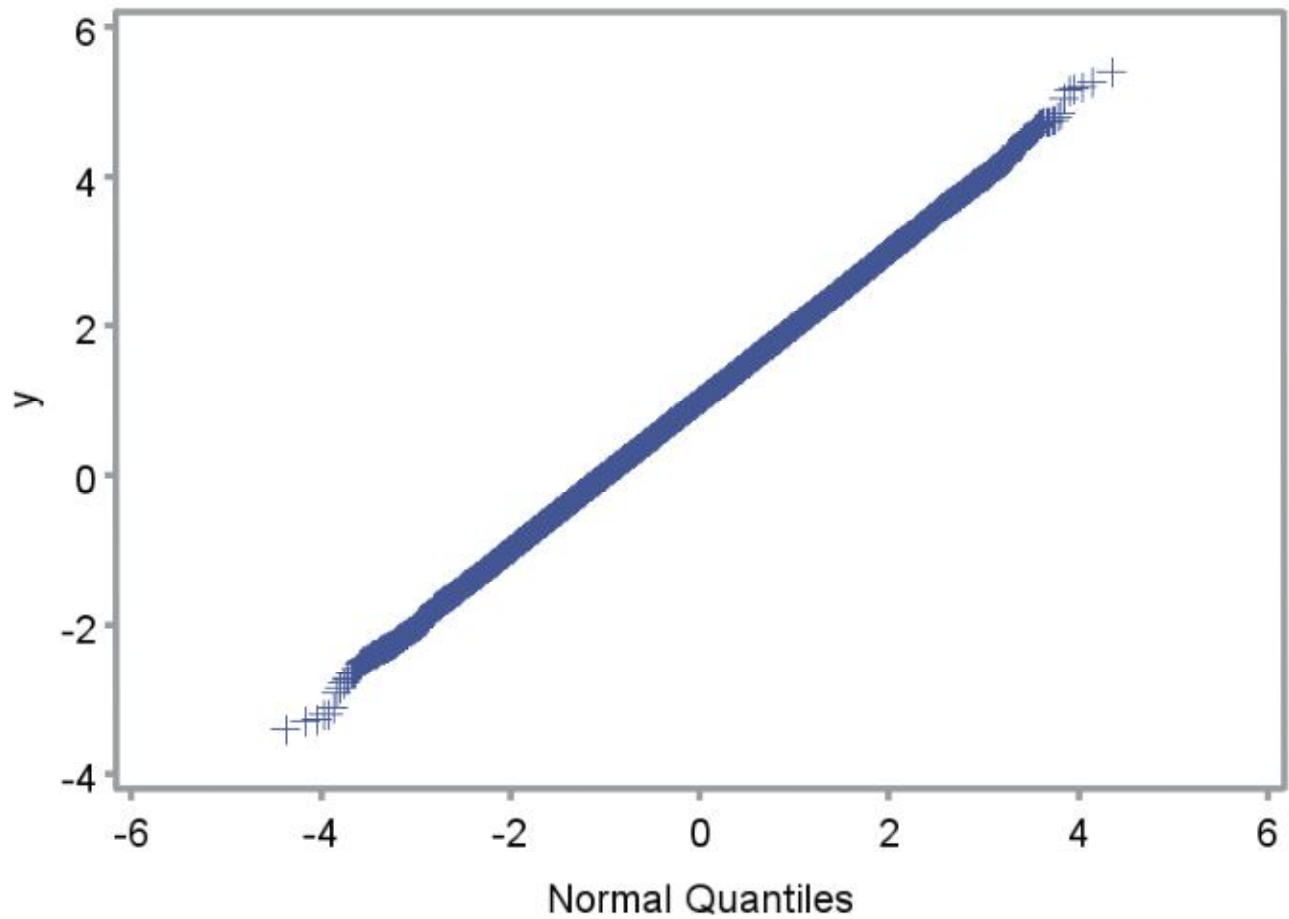
The UNIVARIATE Procedure Fitted Normal Distribution for y

Parameters for Normal Distribution		
Parameter	Symbol	Estimate
Mean	Mu	0.998648
Std Dev	Sigma	0.995622

Goodness-of-Fit Tests for Normal Distribution				
Test	Statistic		p Value	
Kolmogorov-Smirnov	D	0.00194955	Pr > D	>0.150
Cramer-von Mises	W-Sq	0.05113016	Pr > W-Sq	>0.250
Anderson-Darling	A-Sq	0.37157708	Pr > A-Sq	>0.250

Quantiles for Normal Distribution		
Percent	Quantile	
	Observed	Estimated
1.0	-1.32001	-1.31751
5.0	-0.63276	-0.63900
10.0	-0.27305	-0.27729
25.0	0.32387	0.32711
50.0	0.99784	0.99865
75.0	1.67075	1.67019
90.0	2.27134	2.27459
95.0	2.63862	2.63630
99.0	3.33044	3.31481

The UNIVARIATE Procedure

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The UNIVARIATE Procedure
Variable: yprime

Moments			
N	100000	Sum Weights	100000
Mean	2.99729679	Sum Observations	299729.679
Std Deviation	1.99124349	Variance	3.96505065
Skewness	0.00936196	Kurtosis	0.02797082
Uncorrected SS	1294879.9	Corrected SS	396501.1
Coeff Variation	66.4346453	Std Error Mean	0.00629686

Basic Statistical Measures			
Location		Variability	
Mean	2.997297	Std Deviation	1.99124
Median	2.995684	Variance	3.96505
Mode	.	Range	17.60872
		Interquartile Range	2.69377

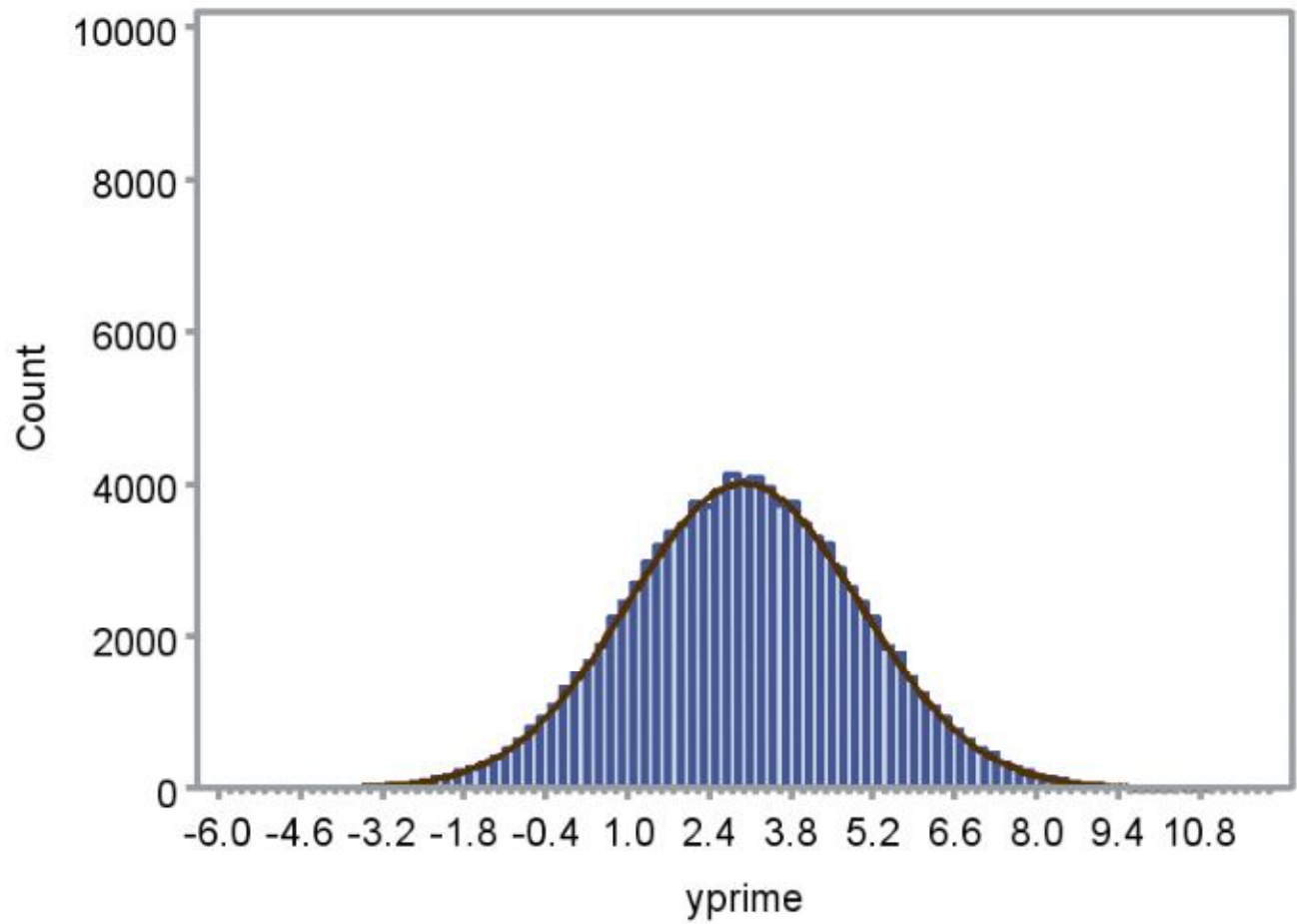
Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	475.9983	Pr > t 	<.0001
Sign	M	43473	Pr >= M 	<.0001
Signed Rank	S	2.4174E9	Pr >= S 	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	11.815598
99%	7.660882
95%	6.277244
90%	5.542683
75% Q3	4.341510
50% Median	2.995684
25% Q1	1.647735
10%	0.453907
5%	-0.265512
1%	-1.640026
0% Min	-5.793120

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-5.79312	8424	11.3162	72177
-5.56507	12031	11.3418	82682

-5.53391	43488	11.3854	99027
-5.42673	79299	11.5126	14250
-5.40362	35718	11.8156	89700

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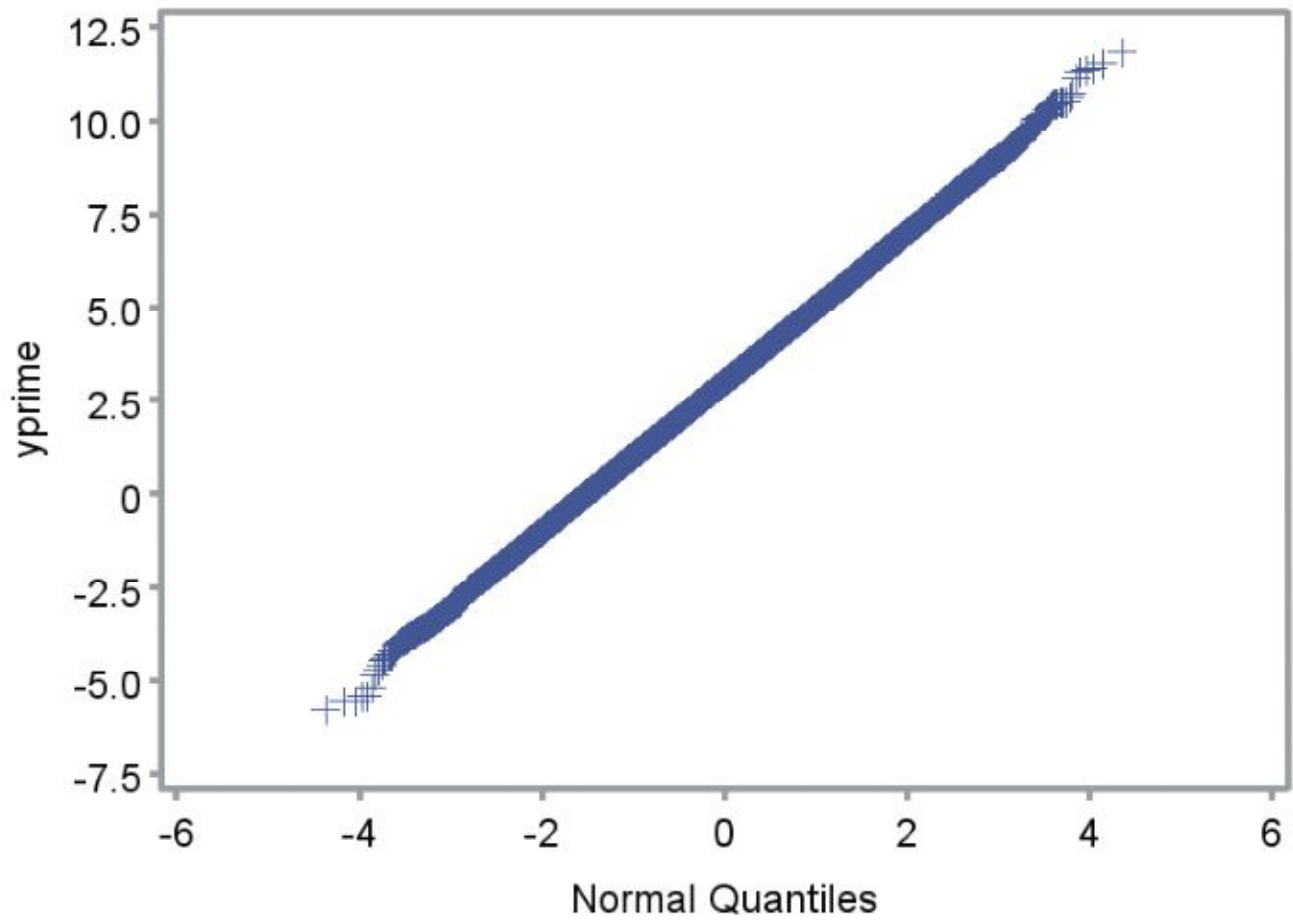
The UNIVARIATE Procedure Fitted Normal Distribution for yprime

Parameters for Normal Distribution		
Parameter	Symbol	Estimate
Mean	Mu	2.997297
Std Dev	Sigma	1.991243

Goodness-of-Fit Tests for Normal Distribution				
Test	Statistic		p Value	
Kolmogorov-Smirnov	D	0.00194955	Pr > D	>0.150
Cramer-von Mises	W-Sq	0.05113016	Pr > W-Sq	>0.250
Anderson-Darling	A-Sq	0.37157708	Pr > A-Sq	>0.250

Quantiles for Normal Distribution		
Percent	Quantile	
	Observed	Estimated
1.0	-1.64003	-1.63503
5.0	-0.26551	-0.27801
10.0	0.45391	0.44542
25.0	1.64774	1.65422
50.0	2.99568	2.99730
75.0	4.34151	4.34037
90.0	5.54268	5.54918
95.0	6.27724	6.27260
99.0	7.66088	7.62962

The UNIVARIATE Procedure

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The UNIVARIATE Procedure Variable: ysum

Moments			
N	100000	Sum Weights	100000
Mean	2.99339759	Sum Observations	299339.759
Std Deviation	1.73130829	Variance	2.99742839
Skewness	0.0049177	Kurtosis	-0.0135252
Uncorrected SS	1195782.76	Corrected SS	299739.842
Coeff Variation	57.8375654	Std Error Mean	0.00547488

Basic Statistical Measures			
Location		Variability	
Mean	2.993398	Std Deviation	1.73131
Median	2.992872	Variance	2.99743
Mode	.	Range	14.58946
		Interquartile Range	2.33420

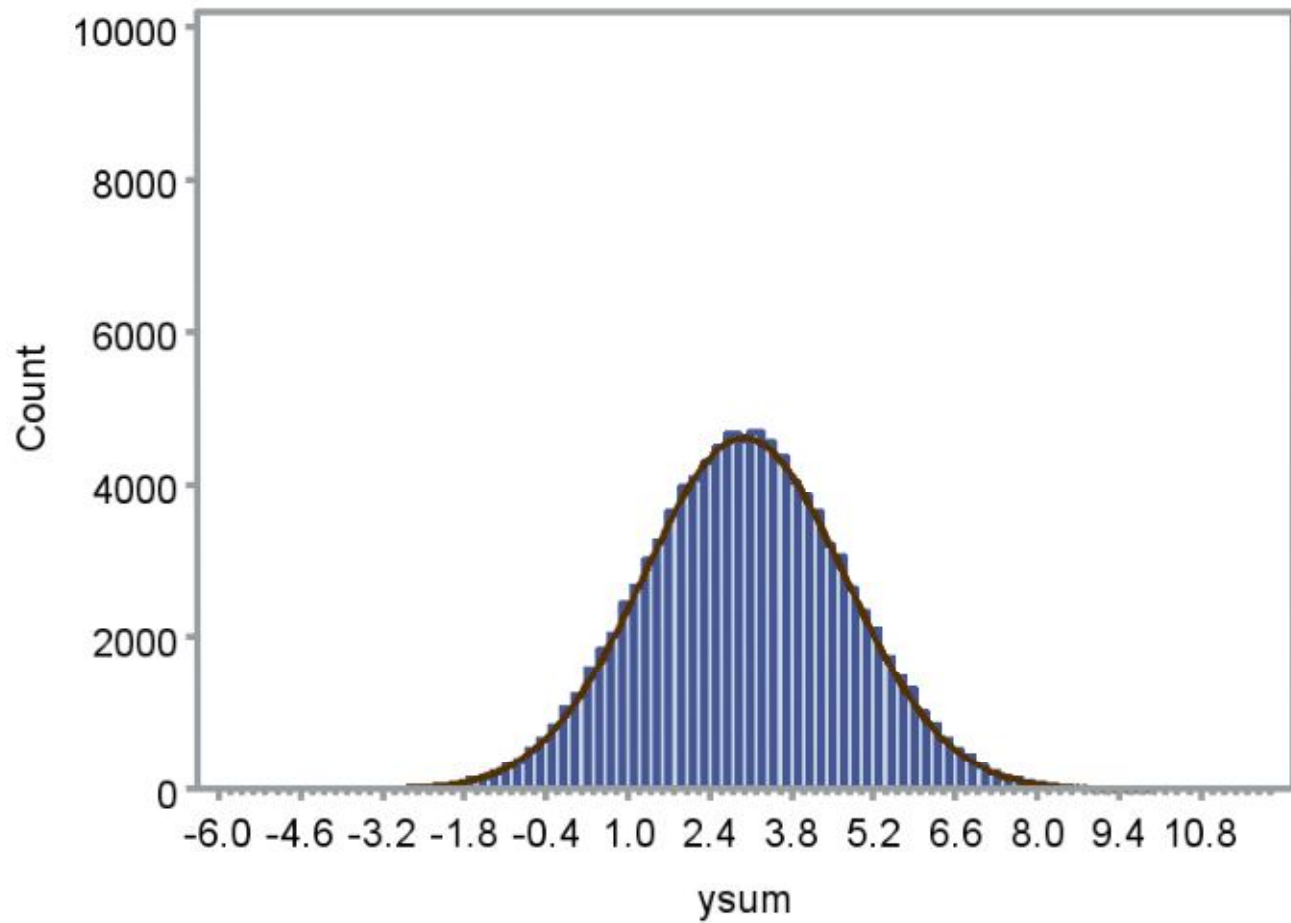
Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	546.7515	Pr > t 	<.0001
Sign	M	45841	Pr >= M 	<.0001
Signed Rank	S	2.4643E9	Pr >= S 	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	10.551464
99%	7.018897
95%	5.844092
90%	5.218450
75% Q3	4.159323
50% Median	2.992872
25% Q1	1.825123
10%	0.767383
5%	0.151157
1%	-1.018072
0% Min	-4.037999

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-4.03800	55358	9.72748	51138
-4.01152	59092	9.79465	40010

-3.97731	11041	9.82482	34308
-3.82684	59940	10.23287	45964
-3.80089	86381	10.55146	70459

The UNIVARIATE Procedure

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Demonstration of expected value and variance rules

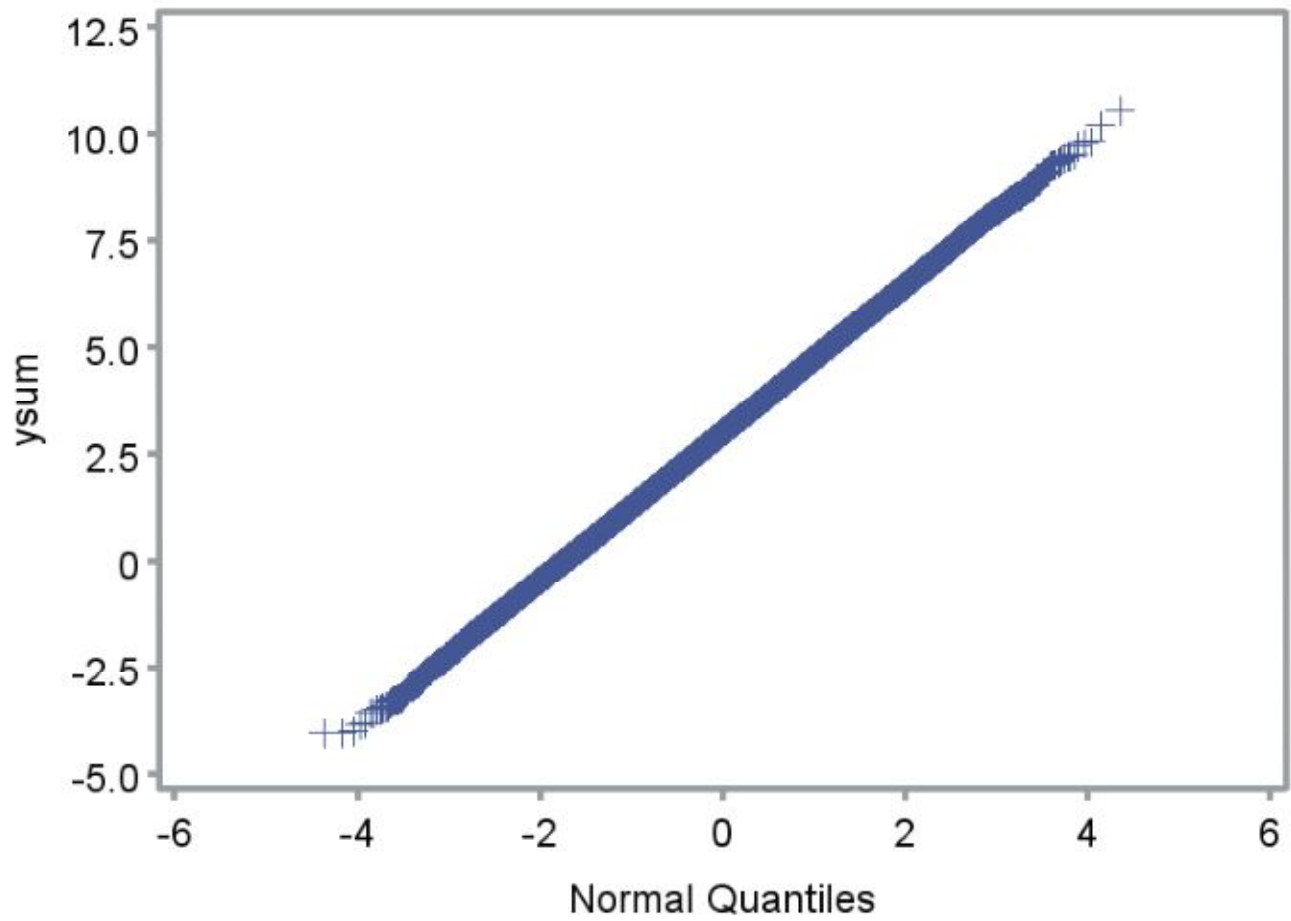
The UNIVARIATE Procedure Fitted Normal Distribution for ysum

Parameters for Normal Distribution		
Parameter	Symbol	Estimate
Mean	Mu	2.993398
Std Dev	Sigma	1.731308

Goodness-of-Fit Tests for Normal Distribution				
Test	Statistic		p Value	
Kolmogorov-Smirnov	D	0.00167443	Pr > D	>0.150
Cramer-von Mises	W-Sq	0.03904006	Pr > W-Sq	>0.250
Anderson-Darling	A-Sq	0.29266609	Pr > A-Sq	>0.250

Quantiles for Normal Distribution		
Percent	Quantile	
	Observed	Estimated
1.0	-1.01807	-1.03423
5.0	0.15116	0.14565
10.0	0.76738	0.77464
25.0	1.82512	1.82565
50.0	2.99287	2.99340
75.0	4.15932	4.16115
90.0	5.21845	5.21216
95.0	5.84409	5.84115
99.0	7.01890	7.02102

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The UNIVARIATE Procedure
Variable: ybar

Moments			
N	100000	Sum Weights	100000
Mean	0.9977992	Sum Observations	99779.9197
Std Deviation	0.57710276	Variance	0.3330476
Skewness	0.0049177	Kurtosis	-0.0135252
Uncorrected SS	132864.751	Corrected SS	33304.4268
Coeff Variation	57.8375654	Std Error Mean	0.00182496

Basic Statistical Measures			
Location		Variability	
Mean	0.997799	Std Deviation	0.57710
Median	0.997624	Variance	0.33305
Mode	.	Range	4.86315
		Interquartile Range	0.77807

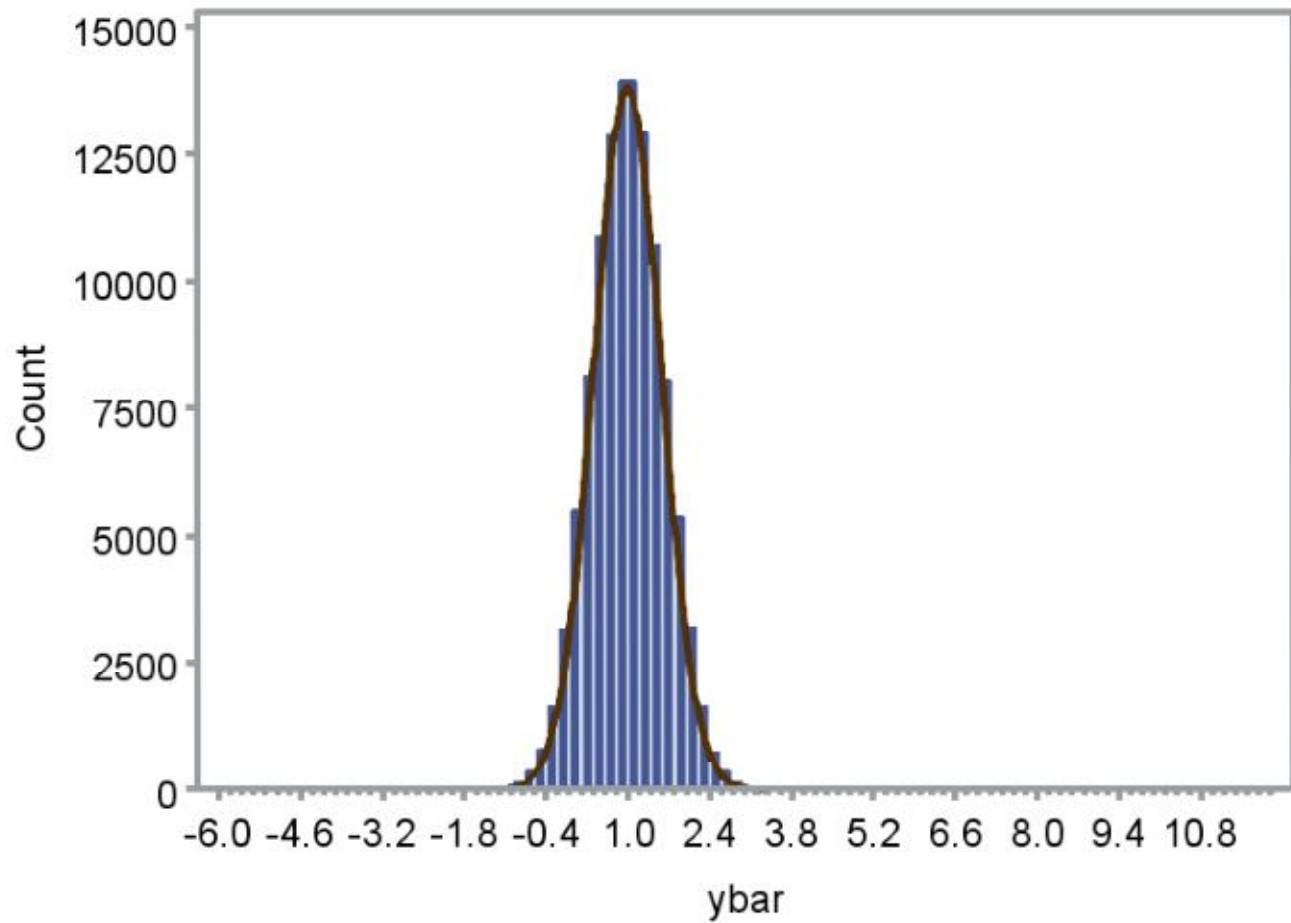
Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	546.7515	Pr > t 	<.0001
Sign	M	45841	Pr >= M 	<.0001
Signed Rank	S	2.4643E9	Pr >= S 	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	3.5171547
99%	2.3396324
95%	1.9480305
90%	1.7394832
75% Q3	1.3864410
50% Median	0.9976240
25% Q1	0.6083744
10%	0.2557942
5%	0.0503858
1%	-0.3393574
0% Min	-1.3459998

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-1.34600	55358	3.24249	51138
-1.33717	59092	3.26488	40010

-1.32577	11041	3.27494	34308
-1.27561	59940	3.41096	45964
-1.26696	86381	3.51715	70459

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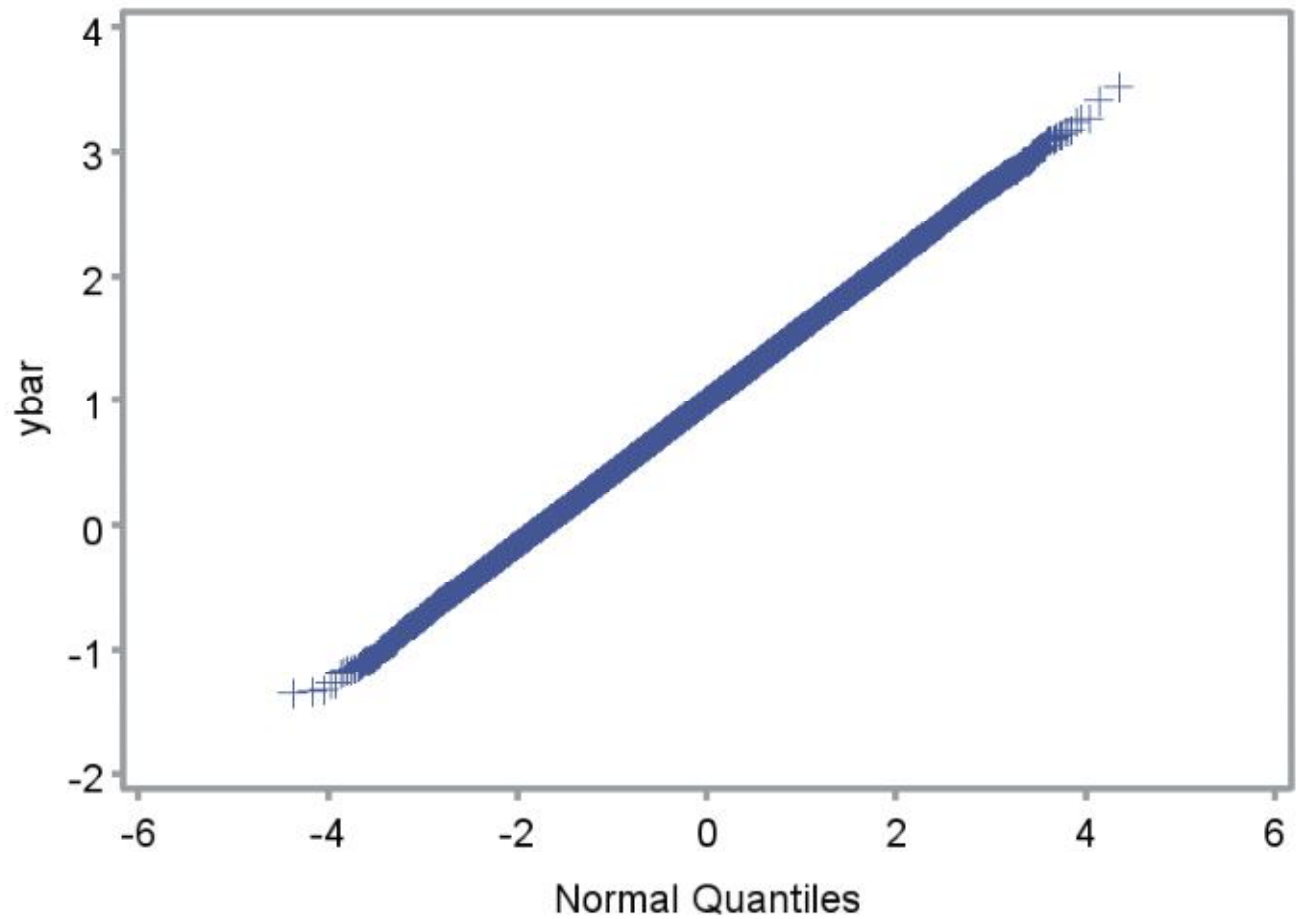
The UNIVARIATE Procedure Fitted Normal Distribution for ybar

Parameters for Normal Distribution		
Parameter	Symbol	Estimate
Mean	Mu	0.997799
Std Dev	Sigma	0.577103

Goodness-of-Fit Tests for Normal Distribution				
Test	Statistic		p Value	
Kolmogorov-Smirnov	D	0.00167443	Pr > D	>0.150
Cramer-von Mises	W-Sq	0.03904006	Pr > W-Sq	>0.250
Anderson-Darling	A-Sq	0.29266609	Pr > A-Sq	>0.250

Quantiles for Normal Distribution		
Percent	Quantile	
	Observed	Estimated
1.0	-0.33936	-0.34474
5.0	0.05039	0.04855
10.0	0.25579	0.25821
25.0	0.60837	0.60855
50.0	0.99762	0.99780
75.0	1.38644	1.38705
90.0	1.73948	1.73739
95.0	1.94803	1.94705
99.0	2.33963	2.34034

The UNIVARIATE Procedure

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The UNIVARIATE Procedure Variable: s2

Moments			
N	100000	Sum Weights	100000
Mean	0.9976018	Sum Observations	99760.18
Std Deviation	0.99912086	Variance	0.9982425
Skewness	2.0423235	Kurtosis	6.57403763
Uncorrected SS	199344.187	Corrected SS	99823.2517
Coeff Variation	100.152272	Std Error Mean	0.0031595

Basic Statistical Measures			
Location		Variability	
Mean	0.997602	Std Deviation	0.99912
Median	0.692743	Variance	0.99824
Mode	.	Range	14.34608
		Interquartile Range	1.09668

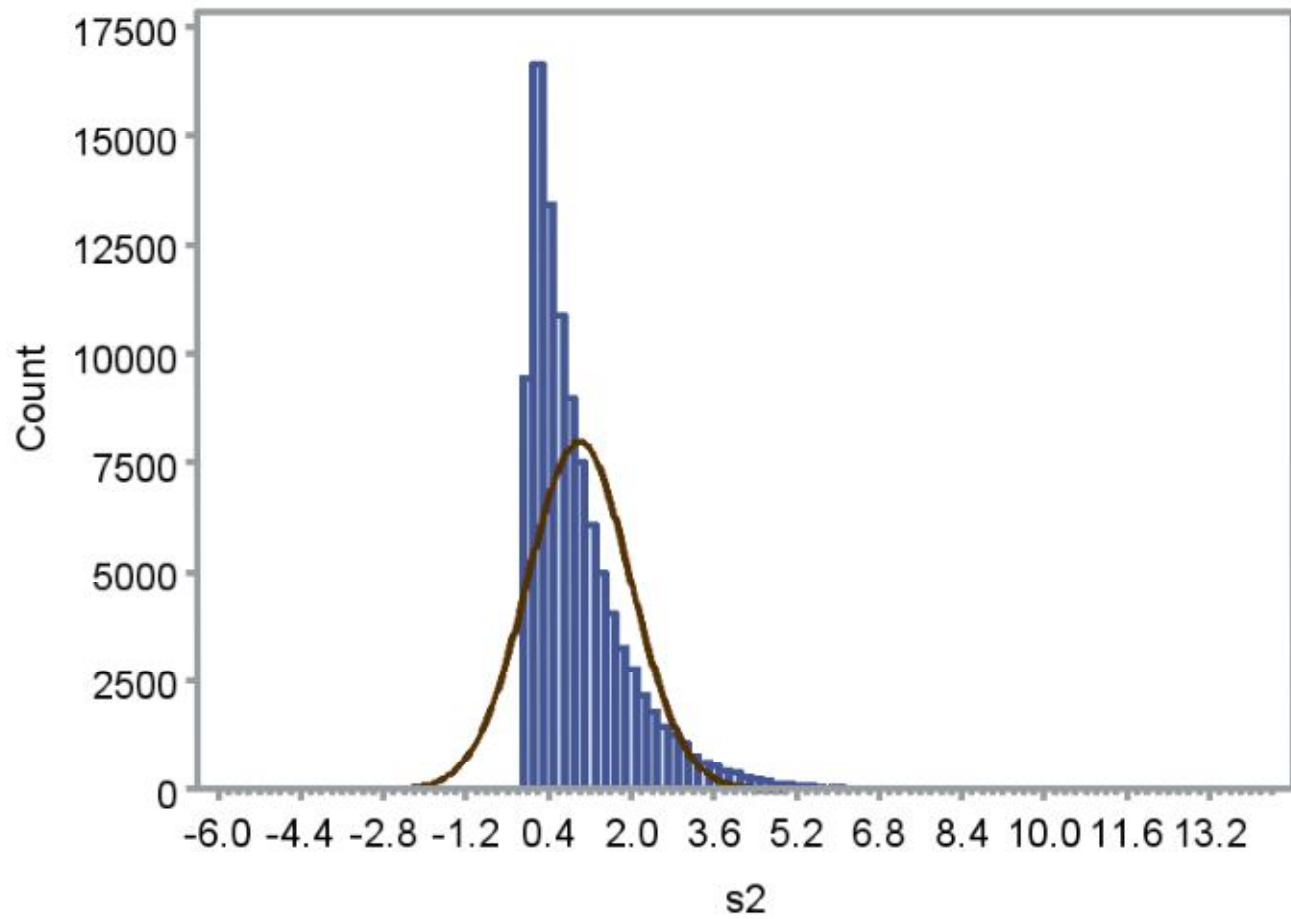
Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	315.747	Pr > t 	<.0001
Sign	M	50000	Pr >= M 	<.0001
Signed Rank	S	2.5E9	Pr >= S 	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	1.43461E+01
99%	4.60171E+00
95%	2.97687E+00
90%	2.29467E+00
75% Q3	1.38297E+00
50% Median	6.92743E-01
25% Q1	2.86286E-01
10%	1.06135E-01
5%	5.16923E-02
1%	1.01859E-02
0% Min	2.41957E-05

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
2.41957E-05	85714	10.5863	22829
3.06100E-05	80257	10.9118	39930

3.68252E-05	1651	11.2406	530
7.63293E-05	43174	13.4332	64395
8.20200E-05	22988	14.3461	18870

The UNIVARIATE Procedure

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The UNIVARIATE Procedure Fitted Normal Distribution for s2

Parameters for Normal Distribution		
Parameter	Symbol	Estimate
Mean	Mu	0.997602
Std Dev	Sigma	0.999121

Goodness-of-Fit Tests for Normal Distribution				
Test	Statistic		p Value	
Kolmogorov-Smirnov	D	0.15903	Pr > D	<0.010
Cramer-von Mises	W-Sq	794.44406	Pr > W-Sq	<0.005
Anderson-Darling	A-Sq	4650.31416	Pr > A-Sq	<0.005

Quantiles for Normal Distribution		
Percent	Quantile	
	Observed	Estimated
1.0	0.01019	-1.32670
5.0	0.05169	-0.64581
10.0	0.10613	-0.28282
25.0	0.28629	0.32371
50.0	0.69274	0.99760
75.0	1.38297	1.67150
90.0	2.29467	2.27803
95.0	2.97687	2.64101
99.0	4.60171	3.32190

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