Problem Statement – Graded Project --- ABHINAV TYAGI

- Domain: Insurance
- Business Context - A XYZ life insurance company wants to predict their customers who are going to churn in next month, and want you to develop a model with proper EDA to get some recommendation. So accordingly they can design and provide offers to the customers.

- Dataset description:

Variable	Details
CustID	unique customer identifier
Mobile_num	mobile number of customer
Churn	Customer churn indicator
Age	Age of the customer
Payment_Period	Payment frequency of the customer in a year
Product	Type of Product
Cust_Tenure	Customer Tenure
EducationField	Highest education of the customer
Gender	Customer Gender
Overall_cust_satisfation_score	Overall customer satisfaction score
Cust_Designation	Designation of the customer in the current organization
CC_Satisfation_score	Satisfaction score of customer towards customer care service
Cust_MaritalStatus	Customer marital status
Cust_Income	Customer monthly income
Agent_Tenure	Tenure of the acquisition agent
Complaint	Weather customer raise a complaint
YTD_contact_cnt	Number of time company contact to the customer for Xsell the products
Due_date_day_cnt	Number of days left for due date
Existing_policy_count	Number of existing policy of the customer
Miss_due_date_cnt	Count of instance, when customer miss the due date of payment

- Create a predictive logistic model on with the below mentioned steps. Also give business insights and recommendation. So business end user can act on the recommendation.
- Learning Steps to perform:

1. Data cleaning (missing value and outlier treatment
2. EDA with proper insights
3. Split the prepared data into train and test
4. Develop model on train dataset
5. Calculate different model performance parameters on train
6. Validate the model on test dataset

Marks Distribution

- **Question 1:**

1.	Import dataset in the SAS environment and check top 10 record of import dataset (2 Mark)

```
PROC IMPORT
datafile='/home/u48688022/ProjectWeek4/Life+Insurance+Dataset.csv'
out=WORK.Insurance replace; delimiter=",";
GETNAMES=yes;
GUESSINGROWS=1000;
RUN;

PROC PRINT
data= WORK.Insurance  (obs=10);
RUN;
```

• Table of Contents

Obs	CustID	Mobile_num	Churn	Age	Payment_Period	Product	Cust_Tenure	EducationField	Gender	Overall_cust_satisfation_score	Cust_Designation	CC_Satisfation_score	Cust_MaritalStatus	Cust_Inc
1	10002	9926913118	0	44	Monthly	Traditional	22	Statistics	Male	2	Manager	4	Divorced	20
2	10005	9955950910	0	46	Yearly	Traditional	11	CA	Male	3	Executive	4	Divorced	18
3	10009	9932307506	0	42	Monthly	Traditional	4	Statistics	Male	3	Senior Manager	3	Single	24
4	10010	9879153854	0	43	Yearly	Traditional	23	CA	Male	5	Manager	3	Divorced	20
5	10014	9885137899	0	50	Yearly	Traditional	19	CA	Male	5	Executive	2	Married	17
6	10019	9918893968	0	43	Yearly	Pure Term Plan	19	Statistics	Female	2	AVP	2	Divorced	30
7	10020	9880627494	0	39	Yearly	Traditional	15	Statistics	Male	3	Executive	2	Single	18
8	10021	9952270464	0	32	Quarterly	Traditional	15	Other	Female	4	Manager	3	Married	19
9	10022	9893757229	1	35	Yearly	Pure Term Plan	4	Statistics	Male	2	Manager	5	Single	18
10	10026	9930780130	0	51	Yearly	Traditional	4	Other	Female	4	VP	3	Married	34

- **Question 2:**

2.	Check variable type of the import dataset (2 Mark)

```
proc contents data = work.insurance;
run;
```

The CONTENTS Procedure

Data Set Name	WORK.INSURANCE	Observations	1924
Member Type	DATA	Variables	20
Engine	V9	Indexes	0
Created	12/29/2020 18:30:53	Observation Length	184
Last Modified	12/29/2020 18:30:53	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information

Data Set Page Size	131072
Number of Data Set Pages	3
First Data Page	1
Max Obs per Page	711
Obs in First Data Page	687
Number of Data Set Repairs	0
Filename	/saswork/SAS_work9830001F542_odaww02-apse1.oda.sas.com/SAS_work13B90001F542_odaww02-apse1.oda.sas.com/insurance.sas7bdat
Release Created	9.0401M6
Host Created	Linux
Inode Number	10747952288
Access Permission	rw-r--r--
Owner Name	u48888022
File Size	512KB
File Size (bytes)	524288

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Informat
4	Age	Num	8	BEST12.	BEST32.
15	Agent_tenure	Num	8	BEST12.	BEST32.
12	CC_Satisfaction_score	Num	8	BEST12.	BEST32.
3	Churn	Num	8	BEST12.	BEST32.
16	Complaint	Num	8	BEST12.	BEST32.
1	CustID	Num	8	BEST12.	BEST32.
11	Cust_Designation	Char	14	$14.	$14.
14	Cust_Income	Num	8	BEST12.	BEST32.
13	Cust_MaritalStatus	Char	8	$8.	$8.
7	Cust_Tenure	Num	8	BEST12.	BEST32.
18	Due_date_day_cnt	Num	8	BEST12.	BEST32.
8	EducationField	Char	17	$17.	$17.
19	Existing_policy_count	Num	8	BEST12.	BEST32.
9	Gender	Char	6	$6.	$6.
20	Max_due_date_cnt	Num	8	BEST12.	BEST32.
2	Mobile_num	Num	8	BEST12.	BEST32.
10	Overall_cust_satisfaction_score	Num	8	BEST12.	BEST32.
5	Payment_Period	Char	9	$9.	$9.

- **Question 3:**

3.	Checks if any variables have missing values, if yes then do treatment? (3 Mark)

```
proc means data=work.insurance NMISS N;
run;
%put ---------->>>>>>NO MISSING VARIABLE;
```

The MEANS Procedure

Variable	N Miss	N
CustID	0	1924
Mobile_num	0	1924
Churn	0	1924
Age	0	1924
Cust_Tenure	0	1924
Overall_cust_satisfation_score	0	1924
CC_Satisfation_score	0	1924
Cust_Income	0	1924
Agent_Tenure	0	1924
Complaint	0	1924
YTD_contact_cnt	0	1924
Due_date_day_cnt	0	1924
Existing_policy_count	0	1924
Miss_due_date_cnt	0	1924

- **Question 4:**

4.	Check summary and percentile distribution of all numerical variables for churners and non-churners? (5 Marks)

```
PROC SUMMARY
PRINT n nmiss min p1 p5 p10 p25 p50 p75 p90 p95 p99 max
data=WORK.insurance;
class churn;
VAR age Cust_Tenure Overall_cust_satisfation_score Cust_Income Agent_Tenure Complaint
   YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;
RUN;
```

The SUMMARY Procedure

Churn	N Obs	Variable	N	N Miss	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
0	1607	Age	1607	0	30.0000000	30.0000000	31.0000000	33.0000000	37.0000000	45.0000000	53.0000000	58.0000000	59.0000000	60.0000000	60.0000000
		Cust_Tenure	1607	0	3.0000000	3.0000000	4.0000000	5.0000000	8.0000000	14.0000000	20.0000000	23.0000000	24.0000000	25.0000000	25.0000000
		Overall_cust_satisfation_score	1607	0	2.0000000	2.0000000	2.0000000	2.0000000	3.0000000	4.0000000	5.0000000	5.0000000	5.0000000	5.0000000	5.0000000
		Cust_Income	1607	0	16051.00	17052.00	17345.00	17789.00	18760.00	20639.00	24268.00	31124.00	33665.00	35436.00	96000.00
		Agent_Tenure	1607	0	0	0	0	1.0000000	1.0000000	2.0000000	4.0000000	7.0000000	8.0000000	10.0000000	10.0000000
		Complaint	1607	0	0	0	0	0	0	0	0	1.0000000	1.0000000	1.0000000	1.0000000
		YTD_contact_cnt	1607	0	16.0000000	16.0000000	16.0000000	17.0000000	18.0000000	20.0000000	23.0000000	26.0000000	28.0000000	30.0000000	31.0000000
		Due_date_day_cnt	1607	0	0	1.0000000	3.0000000	4.0000000	7.0000000	10.0000000	16.0000000	24.0000000	28.0000000	34.0000000	38.0000000
		Existing_policy_count	1607	0	1.0000000	1.0000000	1.0000000	2.0000000	4.0000000	8.0000000	12.0000000	14.0000000	15.0000000	15.0000000	15.0000000
		Miss_due_date_cnt	1607	0	0	0	0	0	0	1.0000000	2.0000000	2.0000000	2.0000000	2.0000000	2.0000000
1	317	Age	317	0	21.0000000	21.0000000	21.0000000	23.0000000	25.0000000	31.0000000	36.0000000	38.0000000	39.0000000	40.0000000	40.0000000
		Cust_Tenure	317	0	1.0000000	1.0000000	1.0000000	1.0000000	3.0000000	5.0000000	8.0000000	9.0000000	10.0000000	10.0000000	10.0000000
		Overall_cust_satisfation_score	317	0	1.0000000	1.0000000	1.0000000	1.0000000	2.0000000	3.0000000	4.0000000	4.0000000	4.0000000	4.0000000	4.0000000
		Cust_Income	317	0	16009.00	16261.00	17044.00	17275.00	17693.00	18691.00	21381.00	25325.00	26609.00	34545.00	35859.00
		Agent_Tenure	317	0	0	0	1.0000000	1.0000000	1.0000000	2.0000000	5.0000000	8.0000000	9.0000000	10.0000000	10.0000000
		Complaint	317	0	0	0	0	0	0	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
		YTD_contact_cnt	317	0	16.0000000	16.0000000	16.0000000	17.0000000	18.0000000	20.0000000	23.0000000	27.0000000	28.0000000	30.0000000	30.0000000
		Due_date_day_cnt	317	0	0	1.0000000	1.0000000	2.0000000	4.0000000	8.0000000	11.0000000	18.0000000	24.0000000	33.0000000	41.0000000
		Existing_policy_count	317	0	1.0000000	1.0000000	1.0000000	2.0000000	4.0000000	8.0000000	12.0000000	14.0000000	15.0000000	15.0000000	15.0000000
		Miss_due_date_cnt	317	0	2.0000000	2.0000000	2.0000000	2.0000000	4.0000000	6.0000000	8.0000000	10.0000000	10.0000000	10.0000000	10.0000000

- **Question 5:**

5.	Check for outlier, if yes then do treatment? (3 Mark)

```
proc univariate data=WORK.Insurance plot;
var Age Cust_Tenure Overall_Cust_Satisfation_Score CC_Satisfation_Score Cust_Income Agent_Tenure
Complaint YTD_contact_cnt Due_date_day_cnt Existing_Policy_Count Miss_due_date_cnt;
run;
/*Outliers */
data WORK.Insurance;
set Work.Insurance;
if cust_income>35331 then cust_income=35331;
if YTD_contact_cnt>30 then YTD_contact_cnt=30;
if due_date_day_cnt>34 then due_date_day_cnt=34;
if miss_due_date_cnt>10 then miss_due_date_cnt=10;
run;
/*Checking distribution after flooring and caping*/
proc univariate data=WORK.Insurance plot;
var Age Cust_Tenure Overall_Cust_Satisfation_Score CC_Satisfation_Score Cust_Income Agent_Tenure
Complaint YTD_contact_cnt Due_date_day_cnt Existing_Policy_Count Miss_due_date_cnt;
run;
```

The UNIVARIATE Procedure
Variable: Age

Moments			
N	1924	Sum Weights	1924
Mean	42.6242204	Sum Observations	82009
Std Deviation	10.0113121	Variance	100.226371
Skewness	0.00576962	Kurtosis	-0.9543936
Uncorrected SS	3688305	Corrected SS	192735.311
Coeff Variation	23.4873789	Std Error Mean	0.22823827

Basic Statistical Measures			
Location		Variability	
Mean	42.62422	Std Deviation	10.01131
Median	42.00000	Variance	100.22637
Mode	38.00000	Range	39.00000
		Interquartile Range	17.00000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	188.7532	Pr > |t|	<.0001
Sign	M	962	Pr >= |M|	<.0001
Signed Rank	S	925925	Pr >= |S|	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	60
99%	60
95%	59
90%	57
75% Q3	51
50% Median	42

- **Question 6:**

6.	Check the proportion of all categorical variables and extract percentage contribution of each class in respective variables? (5 Marks)

```
PROC FREQ
data=WORK.insurance;
tables age Cust_Tenure Overall_cust_satisfation_score Cust_Income Agent_Tenure
Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt
/ NOCUM NOFREQ ;
RUN;
```

The FREQ Procedure

Age	Frequency	Percent
21	17	0.88
22	12	0.62
23	15	0.78
24	16	0.83
25	20	1.04
26	7	0.36
27	21	1.09
28	14	0.73
29	19	0.99
30	68	3.53
31	72	3.74
32	68	3.53
33	72	3.74
34	66	3.43
35	48	2.49

- **Question 7:**

7.	Customer service management want you to create a macro where they will just put mobile number and they will get all the important information like Age, Education, Gender, Income and CustID (6 Marks)

```
%macro Finder(num = );
   proc print data =work.insurance noobs;
   where Mobile_num = &num;
   var CustID Age EducationField Gender Cust_Income ;
   run;
%mend;
%Finder(num= 9926913118);
```

CustID	Age	EducationField	Gender	Cust_Income
10002	44	Statistics	Male	20130

- **Question 8:**

8.	Check correlation of all numerical variables before building model, because we cannot add correlated variables in model? (4 Marks)

```
proc corr data=WORK.insurance ;
var churn age Cust_Tenure Overall_cust_satisfation_score
    Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;
run;
```

The CORR Procedure

11 Variables: Churn Age Cust_Tenure Overall_cust_satisfation_score Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Churn	1924	0.16478	0.37108	317.00000	0	1.00000
Age	1924	42.62422	10.01131	82009	21.00000	80.00000
Cust_Tenure	1924	12.64885	7.01534	24338	1.00000	25.00000
Overall_cust_satisfation_score	1924	3.39553	1.18053	6533	1.00000	5.00000
Cust_Income	1924	21980	4718	42251885	18009	35331
Agent_Tenure	1924	3.16320	2.50125	6086	0	10.00000
Complaint	1924	0.28898	0.45341	556.00000	0	1.00000
YTD_contact_cnt	1924	20.66478	3.62567	39759	16.00000	30.00000
Due_date_day_cnt	1924	11.62942	7.50222	22375	0	34.00000
Existing_policy_count	1924	8.06304	4.32749	15571	1.00000	15.00000
Miss_due_date_cnt	1924	1.80042	2.25118	3464	0	10.00000

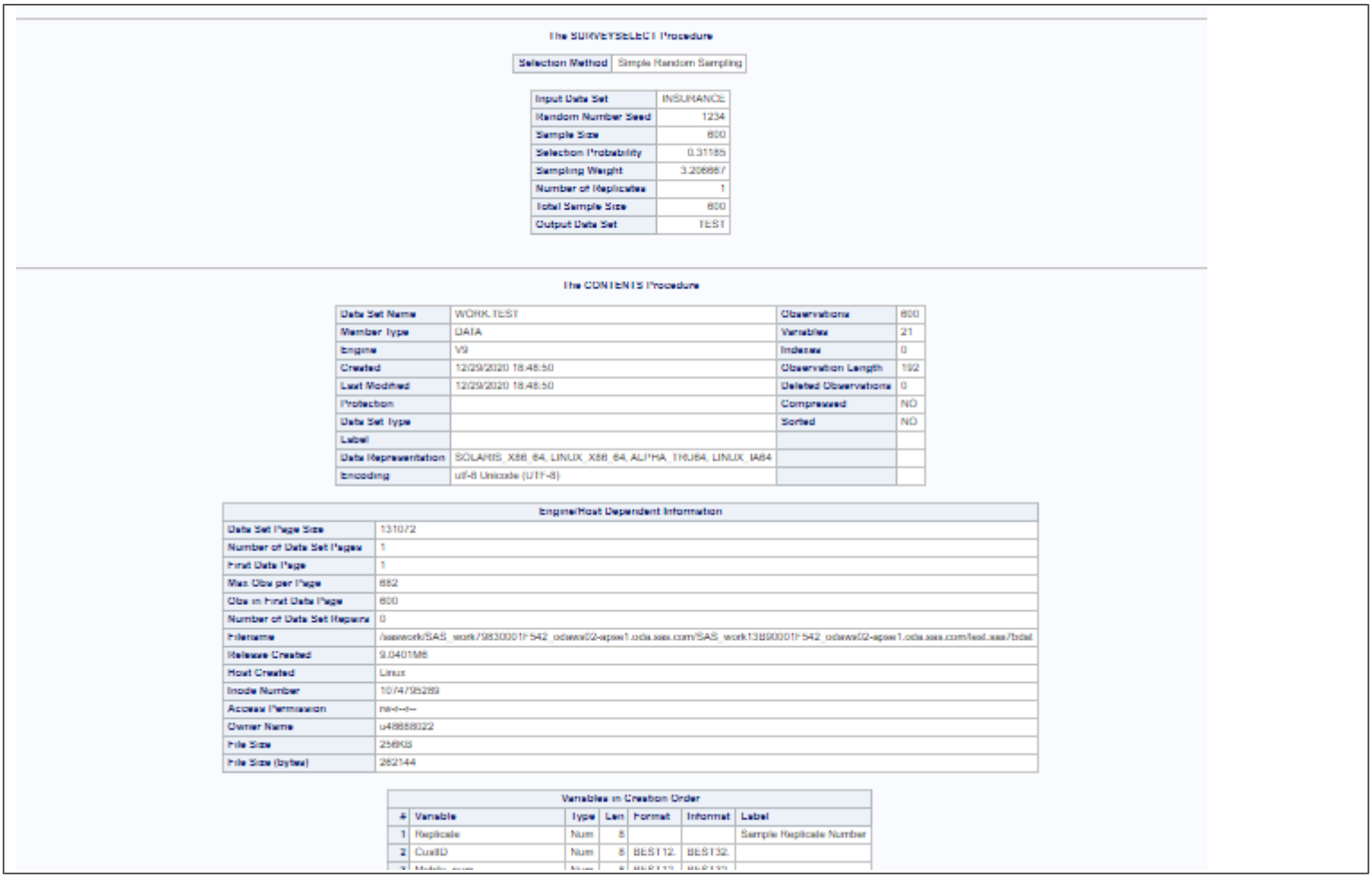
Pearson Correlation Coefficients, N = 1924
Prob > |r| under H0: Rho=0

	Churn	Age	Cust_Tenure	Overall_cust_satisfation_score	Cust_Income	Agent_Tenure	Complaint	YTD_contact_cnt	Due_date_day_cnt	Existing_policy_count	Miss_due_date_cnt
Churn	1.00000	-0.53827 <.0001	-0.46878 <.0001	-0.31386 <.0001	-0.16753 <.0001	0.04049 0.0758	0.24540 <.0001	0.00242 0.9154	-0.18817 <.0001	-0.01927 0.3983	0.82055 <.0001
Age	-0.53827 <.0001	1.00000	0.28821 <.0001	0.18680 <.0001	0.08839 0.0027	-0.03420 0.1337	-0.13405 <.0001	-0.00108 0.9622	0.09038 <.0001	0.01701 0.4558	-0.44228 <.0001
Cust_Tenure	-0.46878 <.0001	0.28821 <.0001	1.00000	0.17760 <.0001	0.07437 0.0011	-0.01564 0.4930	-0.14138 <.0001	0.02939 0.1976	0.08459 0.0002	0.01271 0.5775	-0.37719 <.0001
Overall_cust_satisfation_score	-0.31386 <.0001	0.18680 <.0001	0.17760 <.0001	1.00000	0.07033 0.0020	-0.03825 0.0935	-0.06890 0.0025	-0.01590 0.4857	0.03869 0.0897	0.00843 0.7779	-0.28320 <.0001
Cust_Income	-0.16753 <.0001	0.08839 0.0027	0.07437 0.0011	0.07033 0.0020	1.00000	0.18947 <.0001	0.02282 0.3214	-0.00123 0.9570	0.76874 <.0001	0.02490 0.2750	-0.13646 <.0001
Agent_Tenure	0.04049 0.0758	-0.03420 0.1337	-0.01564 0.4930	-0.03825 0.0935	0.18947 <.0001	1.00000	0.00962 0.8054	0.02611 0.2524	0.25555 <.0001	-0.00868 0.7043	0.03396 0.1385
Complaint	0.24540 <.0001	-0.13405 <.0001	-0.14138 <.0001	-0.06890 0.0025	0.02282 0.3214	0.00962 0.8054	1.00000	-0.01379 0.5454	0.01835 0.4211	-0.00735 0.7474	0.20225 <.0001
YTD_contact_cnt	0.00242 0.9154	-0.00108 0.9622	0.02939 0.1976	-0.01590 0.4857	-0.00123 0.9570	0.02611 0.2524	-0.01379 0.5454	1.00000	0.00956 0.6752	0.05094 0.0255	-0.01400 0.5394
Due_date_day_cnt	-0.18817 <.0001	0.09038 <.0001	0.08459 0.0002	0.03869 0.0897	0.76874 <.0001	0.25555 <.0001	0.01835 0.4211	0.00956 0.6752	1.00000	0.03004 0.1878	-0.13515 <.0001
Existing_policy_count	-0.01927 0.3983	0.01701 0.4558	0.01271 0.5775	0.00843 0.7779	0.02490 0.2750	-0.00868 0.7043	-0.00735 0.7474	0.05094 0.0255	0.03004 0.1878	1.00000	0.00591 0.7956
Miss_due_date_cnt	0.82055 <.0001	-0.44228 <.0001	-0.37719 <.0001	-0.28320 <.0001	-0.13646 <.0001	0.03396 0.1385	0.20225 <.0001	-0.01400 0.5394	-0.13515 <.0001	0.00591 0.7956	1.00000

- **Question 9:**

9.	Create train and test (70:30) dataset from the existing data set. Put seed 1234? (4 Marks)

```
proc freq data=WORK.insurance;
table churn/nocum;
run;
proc surveyselect data=WORK.insurance method=srs rep=1
sampsize=600 seed=1234 out=test;
run;
proc contents data=test varnum;
run;
proc freq data=test;
table churn/nocum;
run;
proc sql;
create table train as select t1.* from WORK.insurance as t1
where Mobile_num not in (select Mobile_num from test);
quit;
proc freq data=train;
table churn/nocum;
run;
```



The SURVEYSELECT Procedure

Selection Method	Simple Random Sampling

Input Data Set	INSURANCE
Random Number Seed	1234
Sample Size	600
Selection Probability	0.31185
Sampling Weight	3.206667
Number of Replicates	1
Total Sample Size	600
Output Data Set	TEST

The CONTENTS Procedure

Data Set Name	WORK.TEST	Observations	600
Member Type	DATA	Variables	21
Engine	V9	Indexes	0
Created	12/29/2020 18:48:50	Observation Length	192
Last Modified	12/29/2020 18:48:50	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
Data Set Page Size	131072
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	682
Obs in First Data Page	600
Number of Data Set Repairs	0
Filename	/saswork/SAS_work7B830001F542_odaws02-apse1.oda.sas.com/SAS_work13B90001F542_odaws02-apse1.oda.sas.com/test.sas7bdat
Release Created	9.0401M6
Host Created	Linux
Inode Number	10747952289
Access Permission	rw-r--r--
Owner Name	u48888022
File Size	256KB
File Size (bytes)	262144

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	Replicate	Num	8			Sample Replicate Number
2	CustID	Num	8	BEST12.	BEST32.	

- **Question 10:**

10.	Develop linear regression model first on the target variable to extract VIF information to check multicollinearity? (6 Marks)

```
PROC REG data = Work.Insurance;
model churn = YTD_contact_cnt Miss_due_date_cnt;
run;
```

The REG Procedure
Model: MODEL1
Dependent Variable: Churn

Number of Observations Read	1924
Number of Observations Used	1924

Analysis of Variance

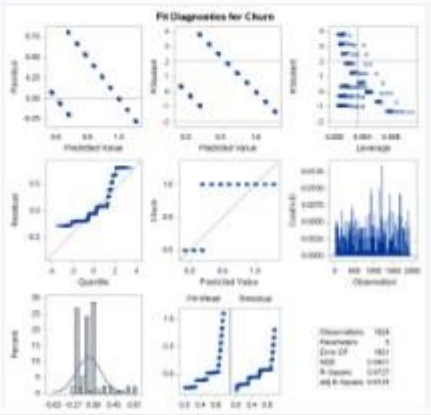
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	178.10471	89.05235	1973.89	<.0001
Error	1921	86.88608	0.04512		
Corrected Total	1923	264.77079			

Root MSE	0.21240	R-Square	0.6727
Dependent Mean	0.18478	Adj R-Sq	0.6723
Coeff Var	114.91597		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.10807	0.02835	-3.81	0.0001
YTD contact cnt	1	0.00142	0.00134	1.07	0.2869
Miss due date cnt	1	0.13520	0.00215	62.83	<.0001

The REG Procedure
Model: MODEL1
Dependent Variable: Churn



- **Question 11:**

11.	Create clean logistic model on the target variables? (4 Marks)

```
proc logistic data=train;
model churn = age Cust_Tenure Overall_cust_satisfation_score
    Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;
run;
proc logistic data=train outmodel=outmod;
model churn = age Cust_Tenure Overall_cust_satisfation_score
    Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;/selection=stepwise;
output out=outreg p=predicted;
run;
```

The LOGISTIC Procedure

Model Information	
Data Set	WORK.TRAIN
Response Variable	Churn
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	1324
Number of Observations Used	1324

Response Profile

Ordered Value	Churn	Total Frequency
1	0	1096
2	1	228

Probability modeled is Churn='0'.

Model Convergence Status
Quasi-complete separation of data points detected.

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	1218.401	87.148
SC	1223.590	144.221
-2 Log L	1216.401	65.148

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	1151.2533	10	<.0001

- **Question 12:**

12.	Create a macro and take a KS approach to take a cut off on the calculated scores? (4 Marks)

- **Question 13:**

13.	Predict test dataset using created model? (2 Marks)

```
*Question 1: Import dataset in the SAS environment and check top 10 record of import dataset (2 Mark);

PROC IMPORT
datafile='/home/u48688022/ProjectWeek4/Life+Insurance+Dataset.csv'
out=WORK.Insurance replace; delimiter=",";
GETNAMES=yes;
GUESSINGROWS=1000;
RUN;

PROC PRINT
data= WORK.Insurance (obs=10);
RUN;

*Question 2: Check variable type of the import dataset (2 Mark);

proc contents data = work.insurance;
run;

*Question 3: Checks if any variables have missing values, if yes then do treatment? (3 Mark);

proc means data=work.insurance NMISS N;
run;
%put ---------->>>>>>NO MISSING VARIABLE;



*Question 4: Check summary and percentile distribution of all numerical variables for churners and non-churners? (5 Ma


PROC SUMMARY
PRINT n nmiss min p1 p5 p10 p25 p50 p75 p90 p95 p99 max
data=WORK.insurance;
class churn;
VAR age Cust_Tenure Overall_cust_satisfaction_score Cust_Income Agent_Tenure Complaint
   YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;
RUN;




*Question 5: Check for outlier, if yes then do treatment? (3 Mark);


proc univariate data=WORK.Insurance plot;
var Age Cust_Tenure Overall_Cust_Satisfation_Score CC_Satisfation_Score Cust_Income Agent_Tenure
Complaint YTD_contact_cnt Due_date_day_cnt Existing_Policy_Count Miss_due_date_cnt;
run;
/*Outliers */
data WORK.Insurance;
set Work.Insurance;
if cust_income>35331 then cust_income=35331;
if YTD_contact_cnt>30 then YTD_contact_cnt=30;
if due_date_day_cnt>34 then due_date_day_cnt=34;
if miss_due_date_cnt>10 then miss_due_date_cnt=10;
run;
/*Checking distribution after flooring and caping*/
proc univariate data=WORK.Insurance plot;
var Age Cust_Tenure Overall_Cust_Satisfation_Score CC_Satisfation_Score Cust_Income Agent_Tenure
Complaint YTD_contact_cnt Due_date_day_cnt Existing_Policy_Count Miss_due_date_cnt;
run;



*Question 6: Check the proportion of all categorical variables and extract percentage
contribution of each class in respective variables? (5 Marks);

PROC FREQ
data=WORK.insurance;
tables age Cust_Tenure Overall_cust_satisfation_score Cust_Income Agent_Tenure
Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt
/ NOCUM NOFREQ ;
RUN;

*Question 7: Customer service management want you to create a macro where they will
just put mobile number and they will get all the important information like Age, Education, Gender, Income and CustID

```

```
77  %macro Finder(num = );
78     proc print data =work.insurance noobs;
79     where Mobile_num = &num;
80     var CustID Age EducationField Gender Cust_Income ;
81     run;
82  %mend;
83  %Finder(num= 9926913118);
84
85  *Question 8: Check correlation of all numerical variables before building model, because we cannot add correlated vari
86
87  proc corr data=WORK.insurance ;
88  var churn age Cust_Tenure Overall_cust_satisfation_score
89      Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;
90  run;
91
92  *Question 9: Create train and test (70:30) dataset from the existing data set. Put seed 1234? (4 Marks);
93
94  proc freq data=WORK.insurance;
95  table churn/nocum;
96  run;
97  proc surveyselect data=WORK.insurance method=srs rep=1
98  sampsize=600 seed=1234 out=test;
99  run;
100 proc contents data=test varnum;
101 run;
102 proc freq data=test;
103 table churn/nocum;
104 run;
105 proc sql;
106 create table train as select t1.* from WORK.insurance as t1
107 where Mobile_num not in (select Mobile_num from test);
108 quit;
109 proc freq data=train;
110 table churn/nocum;
111 run;
112
113 *Question 10: Develop linear regression model first on the target variable to extract VIF information to check multico
114
115 PROC REG data = Work.Insurance;
116 model churn = YTD_contact_cnt Miss_due_date_cnt;
117 run;
118
119 *Question 11:Create clean logistic model on the target variables? (4 Marks);
120
121 proc logistic data=train;
122 model churn = age Cust_Tenure Overall_cust_satisfation_score
123     Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;
124 run;
125 proc logistic data=train outmodel=outmod;
126 model churn = age Cust_Tenure Overall_cust_satisfation_score
127     Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt;/selec
128 output out=outreg p=predicted;
129 run;
130
131 *Question 12: Create a macro and take a KS approach to take a cut off on the calculated scores? (4 Marks);
132
133 *Question 13:Predict test dataset using created model? (2 Marks);
134
135
```

Obs	CustID	Mobile_num	Churn	Age	Payment_Period	Product	Cust_Tenure	EducationField	Gender
1	10002	9926913118	0	44	Monthly	Traditional	22	Statistics	Male
2	10005	9955950910	0	46	Yearly	Traditional	11	CA	Male
3	10009	9932307506	0	42	Monthly	Traditional	4	Statistics	Male
4	10010	9879153854	0	43	Yearly	Traditional	23	CA	Male
5	10014	9885137899	0	50	Yearly	Traditional	19	CA	Male
6	10019	9918893968	0	43	Yearly	Pure Term Plan	19	Statistics	Female
7	10020	9880627494	0	39	Yearly	Traditional	15	Statistics	Male
8	10021	9952270464	0	32	Quarterly	Traditional	15	Other	Female
9	10022	9893757229	1	35	Yearly	Pure Term Plan	4	Statistics	Male
10	10026	9930780130	0	51	Yearly	Traditional	4	Other	Female

Obs	Overall_cust_satisfation_score	Cust_Designation	CC_Satisfation_score	Cust_MaritalStatus	Cust_Income
1	2	Manager	4	Divorced	20130
2	3	Executive	4	Divorced	18468
3	3	Senior Manager	3	Single	24526
4	5	Manager	3	Divorced	20237
5	5	Executive	2	Married	17661
6	2	AVP	2	Divorced	30427
7	3	Executive	2	Single	18944
8	4	Manager	3	Married	19011
9	2	Manager	5	Single	18407
10	4	VP	3	Married	34094

Obs	Agent_Tenure	Complaint	YTD_contact_cnt	Due_date_day_cnt	Existing_policy_count	Miss_due_date_cnt
1	1	0	28	10	15	0
2	9	0	17	6	6	0
3	0	0	26	10	10	2
4	6	0	18	17	15	0
5	0	0	16	3	11	1
6	2	0	21	31	12	1
7	5	1	16	6	6	2
8	0	0	23	5	2	1
9	7	0	28	10	15	8
10	4	0	16	26	10	1

The CONTENTS Procedure

Data Set Name	WORK.INSURANCE	**Observations**	1924
Member Type	DATA	**Variables**	20
Engine	V9	**Indexes**	0
Created	12/20/2020 23:53:10	**Observation Length**	184
Last Modified	12/20/2020 23:53:10	**Deleted Observations**	0
Protection		**Compressed**	NO
Data Set Type		**Sorted**	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
Data Set Page Size	131072
Number of Data Set Pages	3
First Data Page	1
Max Obs per Page	711
Obs in First Data Page	687
Number of Data Set Repairs	0
Filename	/saswork/SAS_work79830001F542_odaws02-apse1.oda.sas.com/SAS_work13B90001F542_odaws02-apse1.oda.sas.com/insurance.sas7bdat
Release Created	9.0401M6
Host Created	Linux
Inode Number	1074800325
Access Permission	rw-r--r--
Owner Name	u48688022
File Size	512KB
File Size (bytes)	524288

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Informat
4	Age	Num	8	BEST12.	BEST32.
15	Agent_Tenure	Num	8	BEST12.	BEST32.
12	CC_Satisfation_score	Num	8	BEST12.	BEST32.
3	Churn	Num	8	BEST12.	BEST32.
16	Complaint	Num	8	BEST12.	BEST32.
1	CustID	Num	8	BEST12.	BEST32.
11	Cust_Designation	Char	14	$14.	$14.

The CONTENTS Procedure

Alphabetic List of Variables and Attributes					
#	**Variable**	**Type**	**Len**	**Format**	**Informat**
14	Cust_Income	Num	8	BEST12.	BEST32.
13	Cust_MaritalStatus	Char	8	$8.	$8.
7	Cust_Tenure	Num	8	BEST12.	BEST32.
18	Due_date_day_cnt	Num	8	BEST12.	BEST32.
8	EducationField	Char	17	$17.	$17.
19	Existing_policy_count	Num	8	BEST12.	BEST32.
9	Gender	Char	6	$6.	$6.
20	Miss_due_date_cnt	Num	8	BEST12.	BEST32.
2	Mobile_num	Num	8	BEST12.	BEST32.
10	Overall_cust_satisfation_score	Num	8	BEST12.	BEST32.
5	Payment_Period	Char	9	$9.	$9.
6	Product	Char	14	$14.	$14.
17	YTD_contact_cnt	Num	8	BEST12.	BEST32.

The MEANS Procedure

Variable	N Miss	N
CustID	0	1924
Mobile_num	0	1924
Churn	0	1924
Age	0	1924
Cust_Tenure	0	1924
Overall_cust_satisfation_score	0	1924
CC_Satisfation_score	0	1924
Cust_Income	0	1924
Agent_Tenure	0	1924
Complaint	0	1924
YTD_contact_cnt	0	1924
Due_date_day_cnt	0	1924
Existing_policy_count	0	1924
Miss_due_date_cnt	0	1924

The SUMMARY Procedure

Churn	N Obs	Variable	N	N Miss	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	50th Pctl
0	1607	Age	1607	0	30.0000000	30.0000000	31.0000000	33.0000000	37.0000000	45.0000000
		Cust_Tenure	1607	0	3.0000000	3.0000000	4.0000000	5.0000000	8.0000000	14.0000000
		Overall_cust_satisfation_score	1607	0	2.0000000	2.0000000	2.0000000	2.0000000	3.0000000	4.0000000
		Cust_Income	1607	0	16051.00	17052.00	17345.00	17789.00	18760.00	20639.00
		Agent_Tenure	1607	0	0	0	0	1.0000000	1.0000000	2.0000000
		Complaint	1607	0	0	0	0	0	0	0
		YTD_contact_cnt	1607	0	16.0000000	16.0000000	16.0000000	17.0000000	18.0000000	20.0000000
		Due_date_day_cnt	1607	0	0	1.0000000	3.0000000	4.0000000	7.0000000	10.0000000
		Existing_policy_count	1607	0	1.0000000	1.0000000	1.0000000	2.0000000	4.0000000	8.0000000
		Miss_due_date_cnt	1607	0	0	0	0	0	0	1.0000000
1	317	Age	317	0	21.0000000	21.0000000	21.0000000	23.0000000	25.0000000	31.0000000
		Cust_Tenure	317	0	1.0000000	1.0000000	1.0000000	1.0000000	3.0000000	5.0000000
		Overall_cust_satisfation_score	317	0	1.0000000	1.0000000	1.0000000	1.0000000	2.0000000	3.0000000
		Cust_Income	317	0	16009.00	16261.00	17044.00	17275.00	17693.00	18691.00
		Agent_Tenure	317	0	0	0	1.0000000	1.0000000	1.0000000	2.0000000
		Complaint	317	0	0	0	0	0	0	1.0000000
		YTD_contact_cnt	317	0	16.0000000	16.0000000	16.0000000	17.0000000	18.0000000	20.0000000
		Due_date_day_cnt	317	0	0	1.0000000	1.0000000	2.0000000	4.0000000	8.0000000
		Existing_policy_count	317	0	1.0000000	1.0000000	1.0000000	2.0000000	4.0000000	8.0000000
		Miss_due_date_cnt	317	0	2.0000000	2.0000000	2.0000000	2.0000000	4.0000000	6.0000000

Churn	N Obs	Variable	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
0	1607	Age	53.0000000	58.0000000	59.0000000	60.0000000	60.0000000
		Cust_Tenure	20.0000000	23.0000000	24.0000000	25.0000000	25.0000000
		Overall_cust_satisfation_score	5.0000000	5.0000000	5.0000000	5.0000000	5.0000000
		Cust_Income	24268.00	31124.00	33665.00	35436.00	96000.00
		Agent_Tenure	4.0000000	7.0000000	8.0000000	10.0000000	10.0000000
		Complaint	0	1.0000000	1.0000000	1.0000000	1.0000000
		YTD_contact_cnt	23.0000000	26.0000000	28.0000000	30.0000000	31.0000000
		Due_date_day_cnt	16.0000000	24.0000000	28.0000000	34.0000000	38.0000000
		Existing_policy_count	12.0000000	14.0000000	15.0000000	15.0000000	15.0000000
		Miss_due_date_cnt	2.0000000	2.0000000	2.0000000	2.0000000	2.0000000
1	317	Age	36.0000000	38.0000000	39.0000000	40.0000000	40.0000000
		Cust_Tenure	8.0000000	9.0000000	10.0000000	10.0000000	10.0000000
		Overall_cust_satisfation_score	4.0000000	4.0000000	4.0000000	4.0000000	4.0000000
		Cust_Income	21381.00	25325.00	26609.00	34545.00	35859.00
		Agent_Tenure	5.0000000	8.0000000	9.0000000	10.0000000	10.0000000
		Complaint	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
		YTD_contact_cnt	23.0000000	27.0000000	28.0000000	30.0000000	30.0000000
		Due_date_day_cnt	11.0000000	18.0000000	24.0000000	33.0000000	41.0000000
		Existing_policy_count	12.0000000	14.0000000	15.0000000	15.0000000	15.0000000
		Miss_due_date_cnt	8.0000000	10.0000000	10.0000000	10.0000000	10.0000000

The UNIVARIATE Procedure
Variable: Age

Moments			
N	1924	**Sum Weights**	1924
Mean	42.6242204	**Sum Observations**	82009
Std Deviation	10.0113121	**Variance**	100.226371
Skewness	0.00576962	**Kurtosis**	-0.9543936
Uncorrected SS	3688305	**Corrected SS**	192735.311
Coeff Variation	23.4873789	**Std Error Mean**	0.22823827

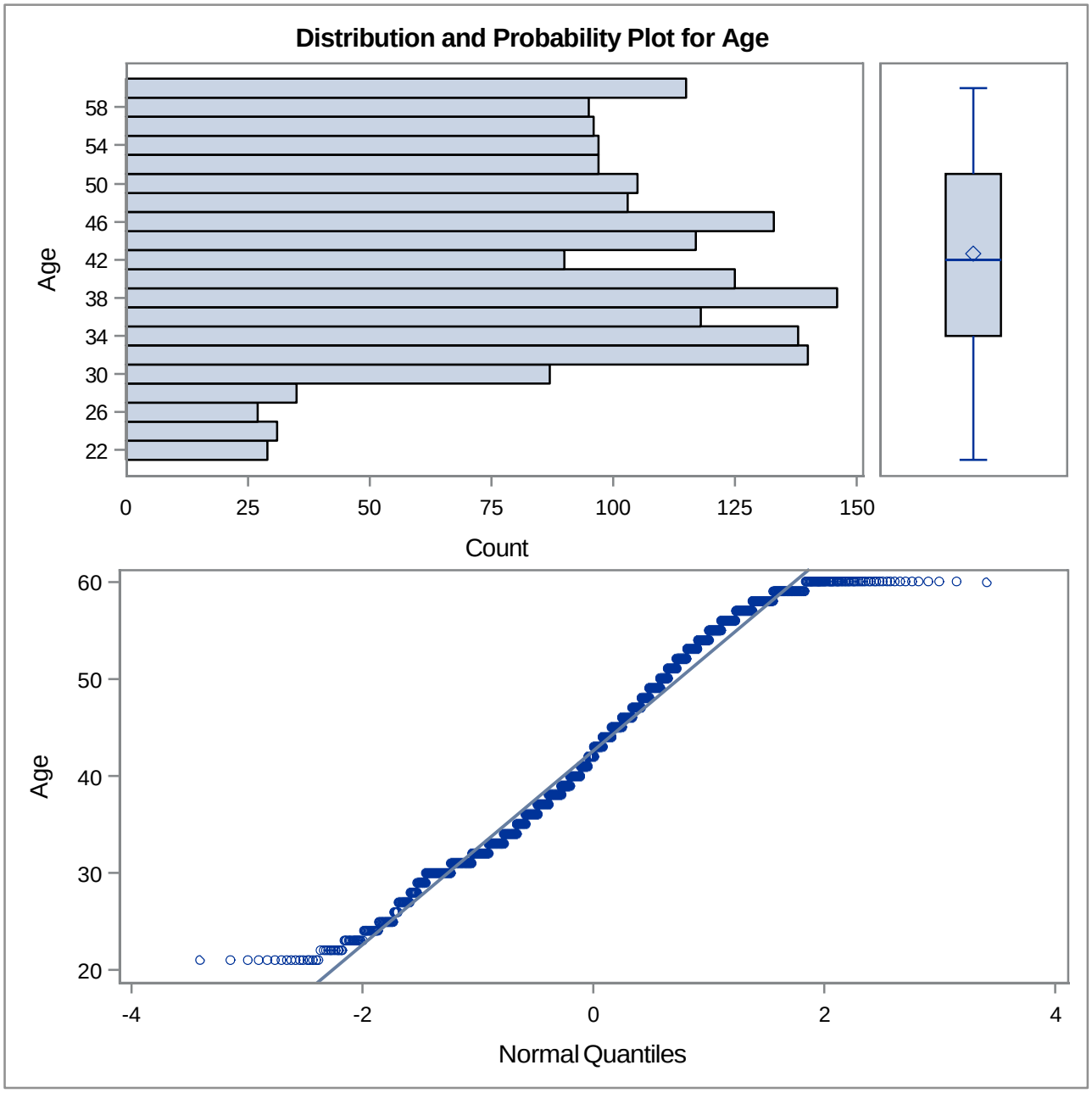
Basic Statistical Measures			
Location		**Variability**	
Mean	42.62422	**Std Deviation**	10.01131
Median	42.00000	**Variance**	100.22637
Mode	38.00000	**Range**	39.00000
		Interquartile Range	17.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	186.7532	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	60
99%	60
95%	59
90%	57
75% Q3	51
50% Median	42
25% Q1	34
10%	30
5%	27
1%	22
0% Min	21

The UNIVARIATE Procedure
Variable: Age

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
21	1764	60	1777
21	1712	60	1823
21	1648	60	1877
21	1637	60	1903
21	1596	60	1905



The UNIVARIATE Procedure
Variable: Cust_Tenure

Moments			
N	1924	**Sum Weights**	1924
Mean	12.6486486	**Sum Observations**	24336
Std Deviation	7.01534187	**Variance**	49.2150216
Skewness	0.18921756	**Kurtosis**	-1.2031407
Uncorrected SS	402458	**Corrected SS**	94640.4865
Coeff Variation	55.4631729	**Std Error Mean**	0.15993603

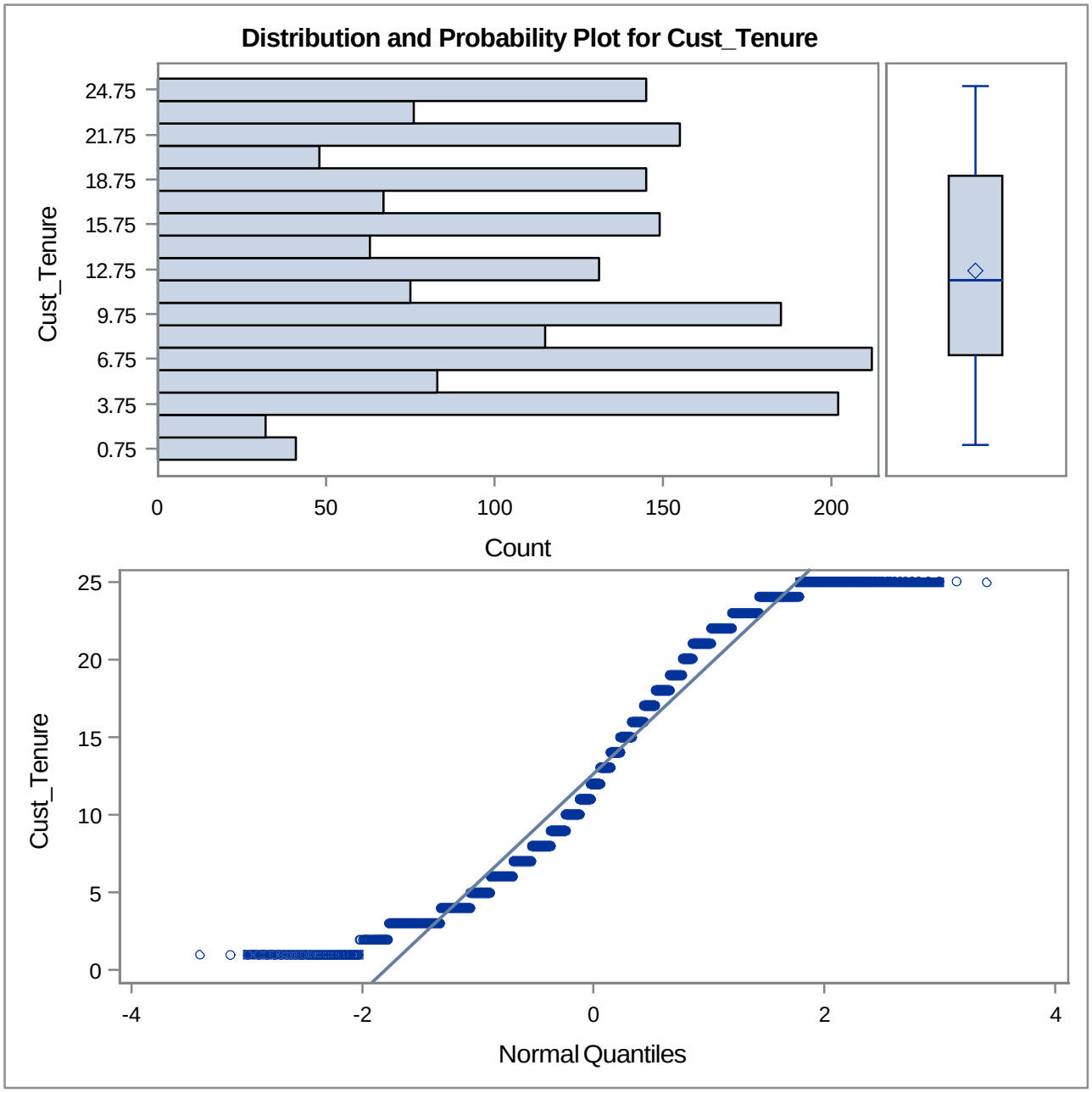
Basic Statistical Measures			
Location		**Variability**	
Mean	12.64865	**Std Deviation**	7.01534
Median	12.00000	**Variance**	49.21502
Mode	8.00000	**Range**	24.00000
		Interquartile Range	12.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	79.08567	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	25
99%	25
95%	24
90%	23
75% Q3	19
50% Median	12
25% Q1	7
10%	4
5%	3
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: Cust_Tenure

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1921	25	1820
1	1882	25	1837
1	1853	25	1886
1	1834	25	1903
1	1814	25	1905



The UNIVARIATE Procedure
Variable: Overall_cust_satisfation_score

Moments			
N	1924	**Sum Weights**	1924
Mean	3.39553015	**Sum Observations**	6533
Std Deviation	1.18053232	**Variance**	1.39365656
Skewness	-0.1158404	**Kurtosis**	-1.1124382
Uncorrected SS	24863	**Corrected SS**	2680.00156
Coeff Variation	34.767246	**Std Error Mean**	0.02691382

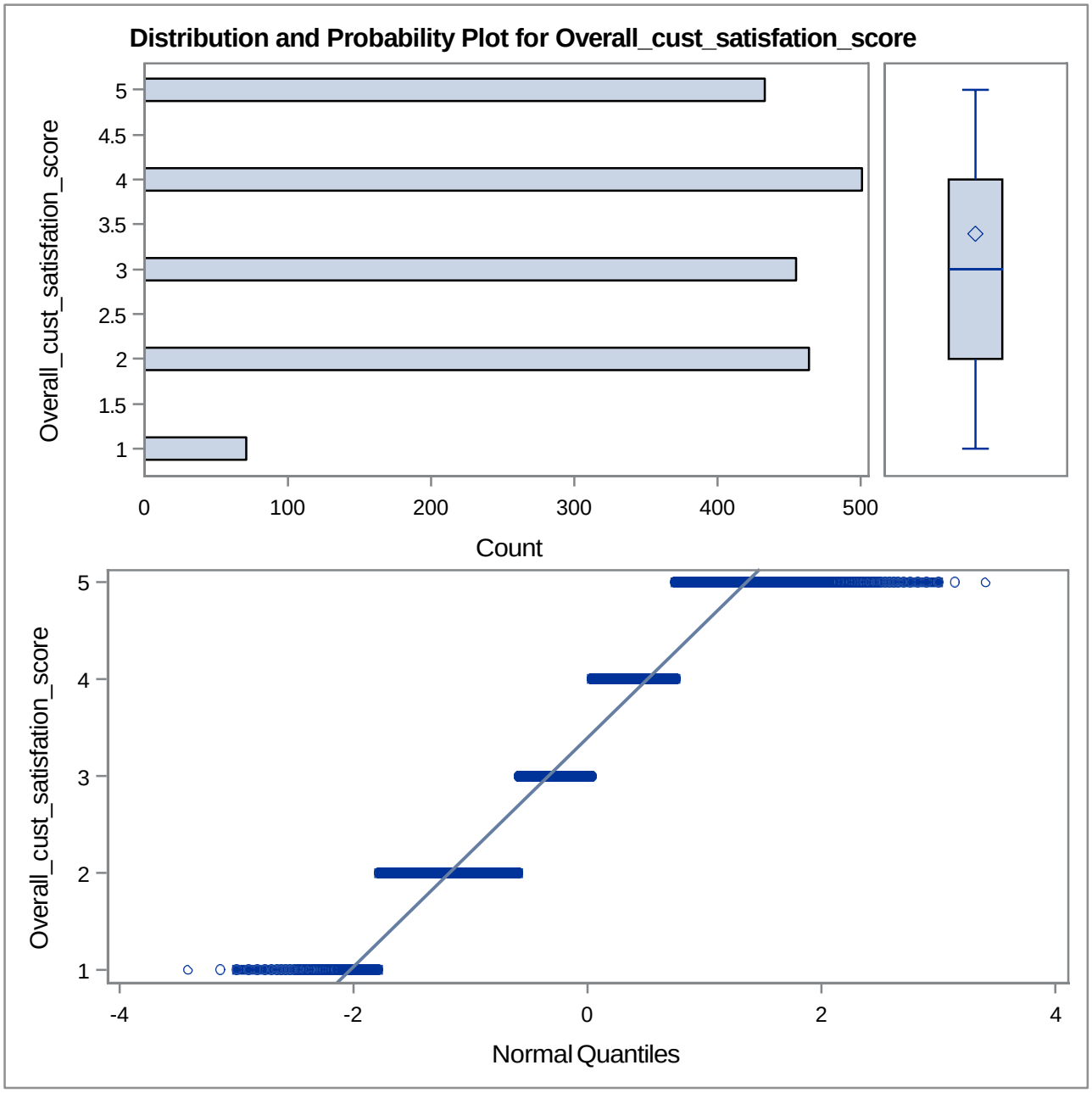
Basic Statistical Measures			
Location		**Variability**	
Mean	3.395530	**Std Deviation**	1.18053
Median	3.000000	**Variance**	1.39366
Mode	4.000000	**Range**	4.00000
		Interquartile Range	2.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	126.1631	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	5
99%	5
95%	5
90%	5
75% Q3	4
50% Median	3
25% Q1	2
10%	2
5%	2
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: Overall_cust_satisfation_score

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1888	5	1911
1	1885	5	1915
1	1874	5	1918
1	1856	5	1919
1	1788	5	1920



The UNIVARIATE Procedure
Variable: CC_Satisfation_score

Moments			
N	1924	**Sum Weights**	1924
Mean	3.0514553	**Sum Observations**	5871
Std Deviation	1.36631832	**Variance**	1.86682575
Skewness	-0.123559	**Kurtosis**	-1.1147222
Uncorrected SS	21505	**Corrected SS**	3589.90593
Coeff Variation	44.7759572	**Std Error Mean**	0.03114938

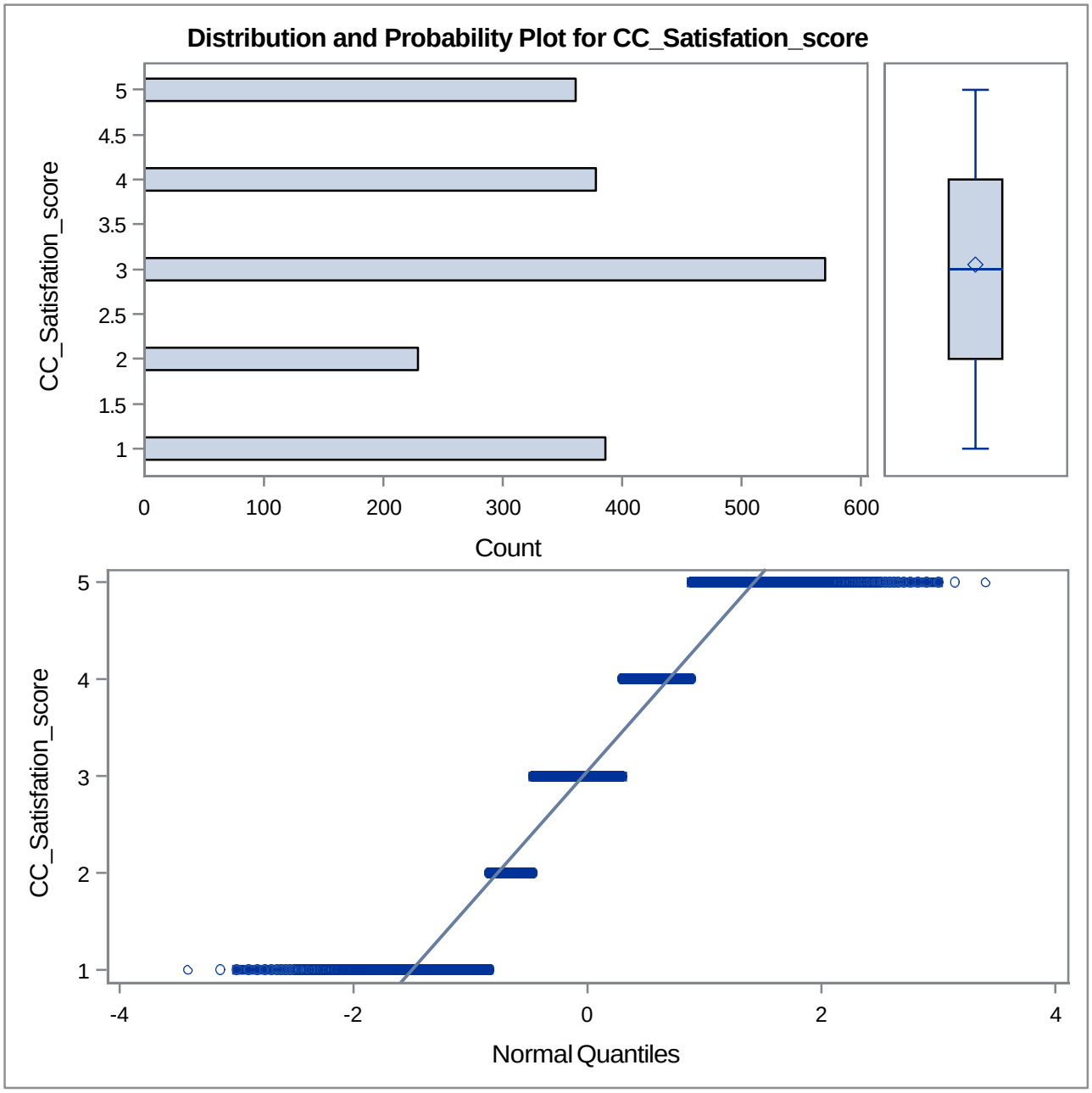
Basic Statistical Measures			
Location		**Variability**	
Mean	3.051455	**Std Deviation**	1.36632
Median	3.000000	**Variance**	1.86683
Mode	3.000000	**Range**	4.00000
		Interquartile Range	2.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	97.962	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	5
99%	5
95%	5
90%	5
75% Q3	4
50% Median	3
25% Q1	2
10%	1
5%	1
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: CC_Satisfation_score

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1923	5	1895
1	1922	5	1901
1	1916	5	1905
1	1911	5	1915
1	1910	5	1921



The UNIVARIATE Procedure
Variable: Cust_Income

Moments			
N	1924	**Sum Weights**	1924
Mean	22026.2713	**Sum Observations**	42378546
Std Deviation	5270.94271	**Variance**	27782837.1
Skewness	3.75076965	**Kurtosis**	38.8971049
Uncorrected SS	9.86868E11	**Corrected SS**	5.34264E10
Coeff Variation	23.9302542	**Std Error Mean**	120.16715

Basic Statistical Measures			
Location		**Variability**	
Mean	22026.27	**Std Deviation**	5271
Median	20391.50	**Variance**	27782837
Mode	17177.00	**Range**	79991
		Interquartile Range	5212

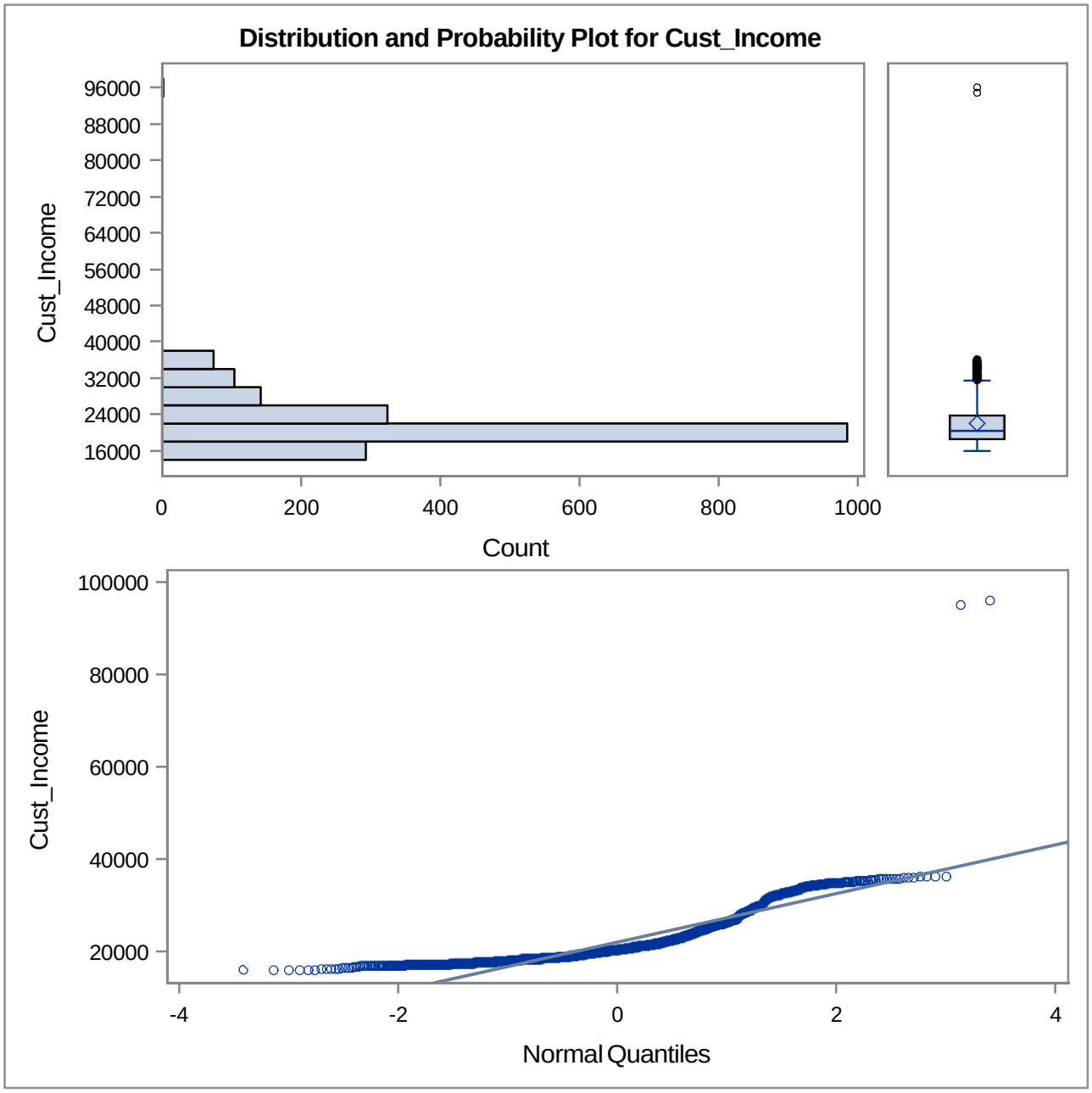
Note: The mode displayed is the smallest of 5 modes with a count of 4.

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	183.2969	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	96000.0
99%	35331.0
95%	33159.0
90%	29582.0
75% Q3	23767.5
50% Median	20391.5
25% Q1	18556.0
10%	17619.0
5%	17296.0
1%	17001.0
0% Min	16009.0

The UNIVARIATE Procedure
Variable: Cust_Income

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
16009	160	35943	1728
16051	732	35999	1030
16051	241	35999	1509
16091	935	95000	13
16102	559	96000	983



The UNIVARIATE Procedure
Variable: Agent_Tenure

Moments			
N	1924	**Sum Weights**	1924
Mean	3.16320166	**Sum Observations**	6086
Std Deviation	2.50124822	**Variance**	6.25624268
Skewness	0.9674889	**Kurtosis**	0.04843355
Uncorrected SS	31282	**Corrected SS**	12030.7547
Coeff Variation	79.073309	**Std Error Mean**	0.05702355

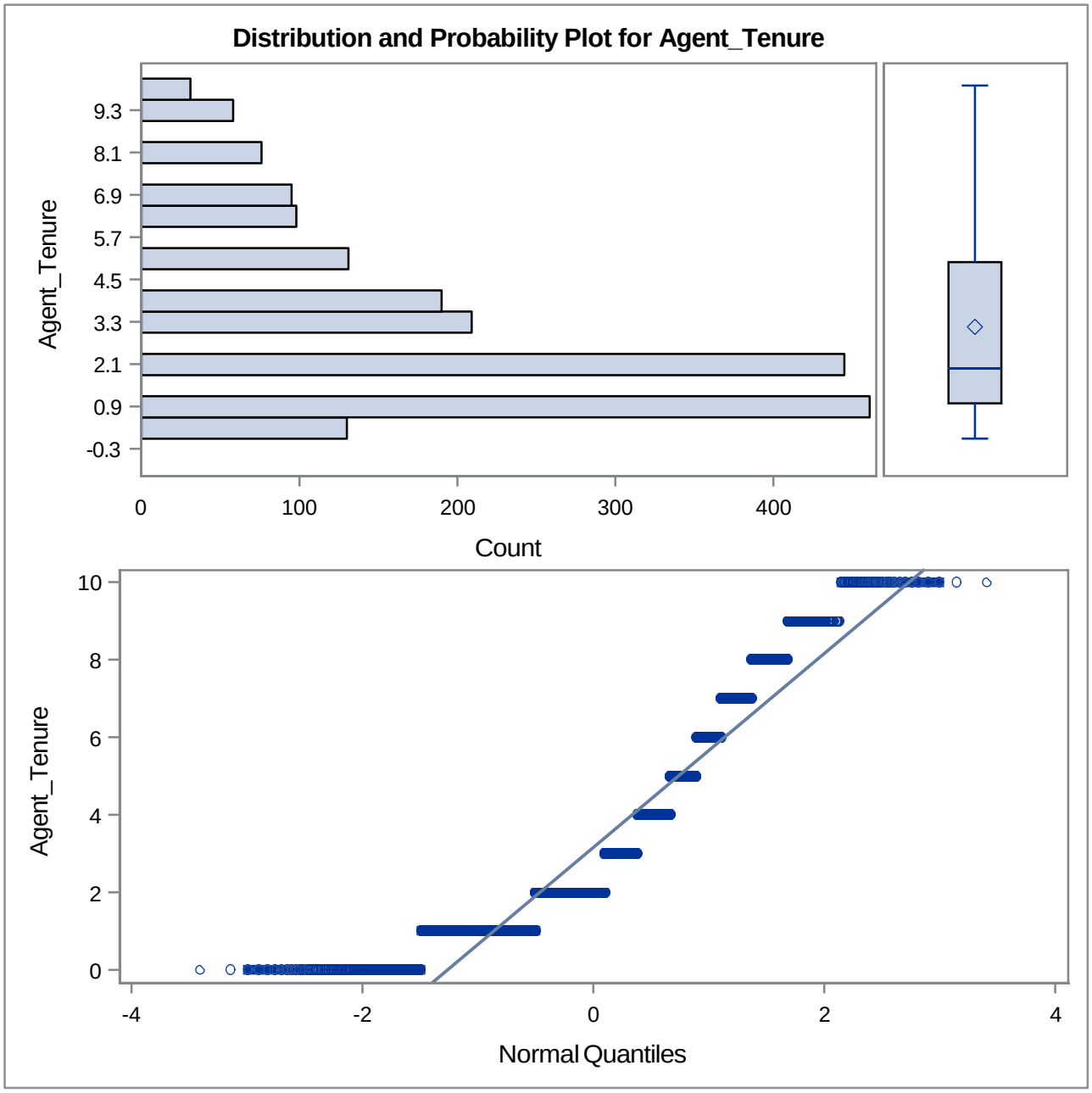
Basic Statistical Measures			
Location		**Variability**	
Mean	3.163202	**Std Deviation**	2.50125
Median	2.000000	**Variance**	6.25624
Mode	1.000000	**Range**	10.00000
		Interquartile Range	4.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	55.47185	**Pr > |t|**	<.0001
Sign	**M**	897	**Pr >= |M|**	<.0001
Signed Rank	**S**	805057.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	10
99%	10
95%	8
90%	7
75% Q3	5
50% Median	2
25% Q1	1
10%	1
5%	0
1%	0
0% Min	0

The UNIVARIATE Procedure
Variable: Agent_Tenure

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	962	10	1687
0	952	10	1701
0	951	10	1721
0	942	10	1840
0	941	10	1856



The UNIVARIATE Procedure
Variable: Complaint

Moments			
N	1924	**Sum Weights**	1924
Mean	0.28898129	**Sum Observations**	556
Std Deviation	0.45340705	**Variance**	0.20557795
Skewness	0.93178213	**Kurtosis**	-1.1329609
Uncorrected SS	556	**Corrected SS**	395.326403
Coeff Variation	156.898411	**Std Error Mean**	0.01033679

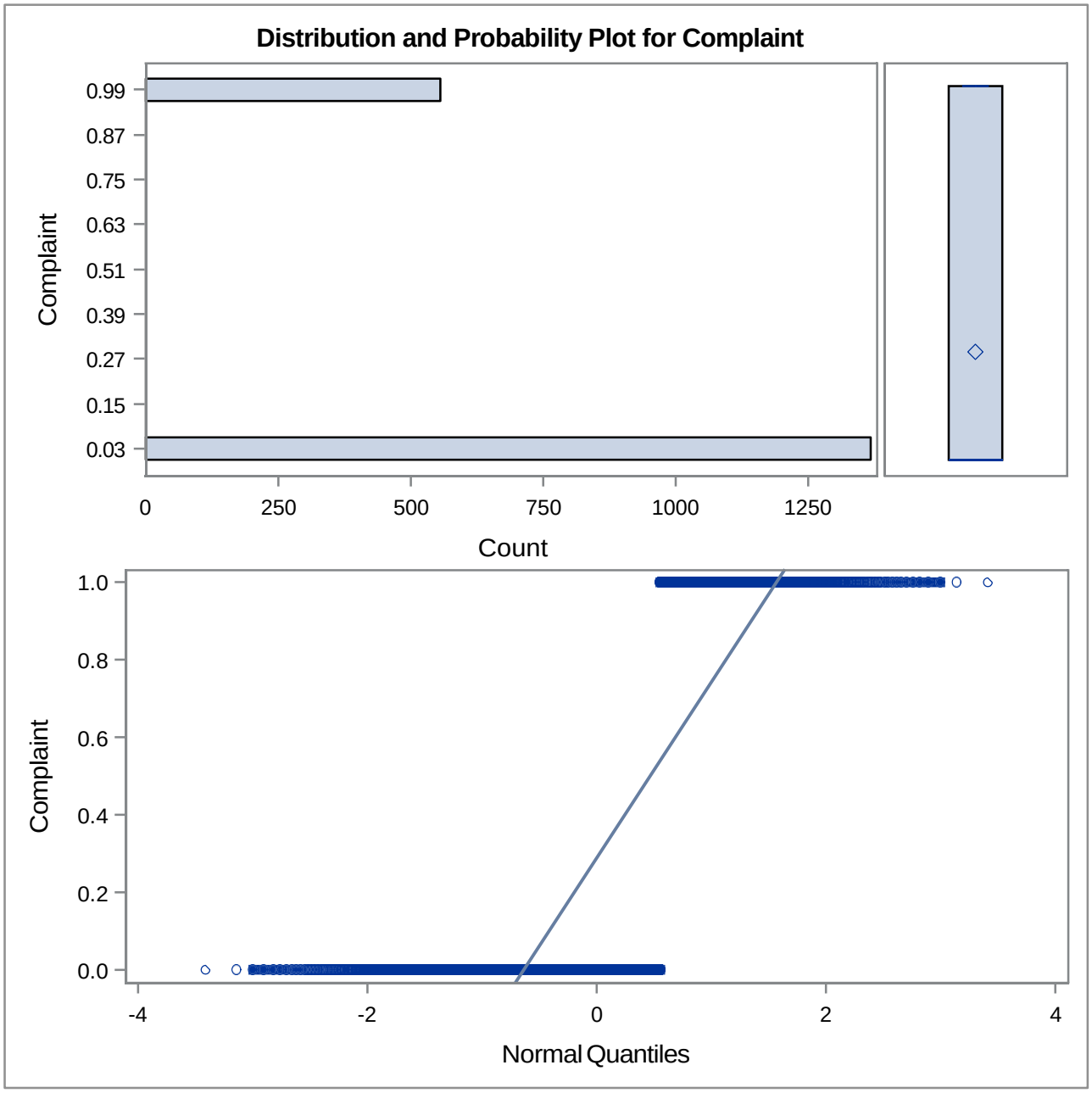
Basic Statistical Measures			
Location		**Variability**	
Mean	0.288981	**Std Deviation**	0.45341
Median	0.000000	**Variance**	0.20558
Mode	0.000000	**Range**	1.00000
		Interquartile Range	1.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	27.95658	**Pr > |t|**	<.0001
Sign	**M**	278	**Pr >= |M|**	<.0001
Signed Rank	**S**	77423	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	1
99%	1
95%	1
90%	1
75% Q3	1
50% Median	0
25% Q1	0
10%	0
5%	0
1%	0
0% Min	0

The UNIVARIATE Procedure
Variable: Complaint

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	1923	1	1908
0	1922	1	1916
0	1920	1	1919
0	1918	1	1921
0	1917	1	1924



The UNIVARIATE Procedure
Variable: YTD_contact_cnt

Moments			
N	1924	**Sum Weights**	1924
Mean	20.6689189	**Sum Observations**	39767
Std Deviation	3.63693577	**Variance**	13.2273018
Skewness	0.83112558	**Kurtosis**	-0.1898013
Uncorrected SS	847377	**Corrected SS**	25436.1014
Coeff Variation	17.5961587	**Std Error Mean**	0.082915

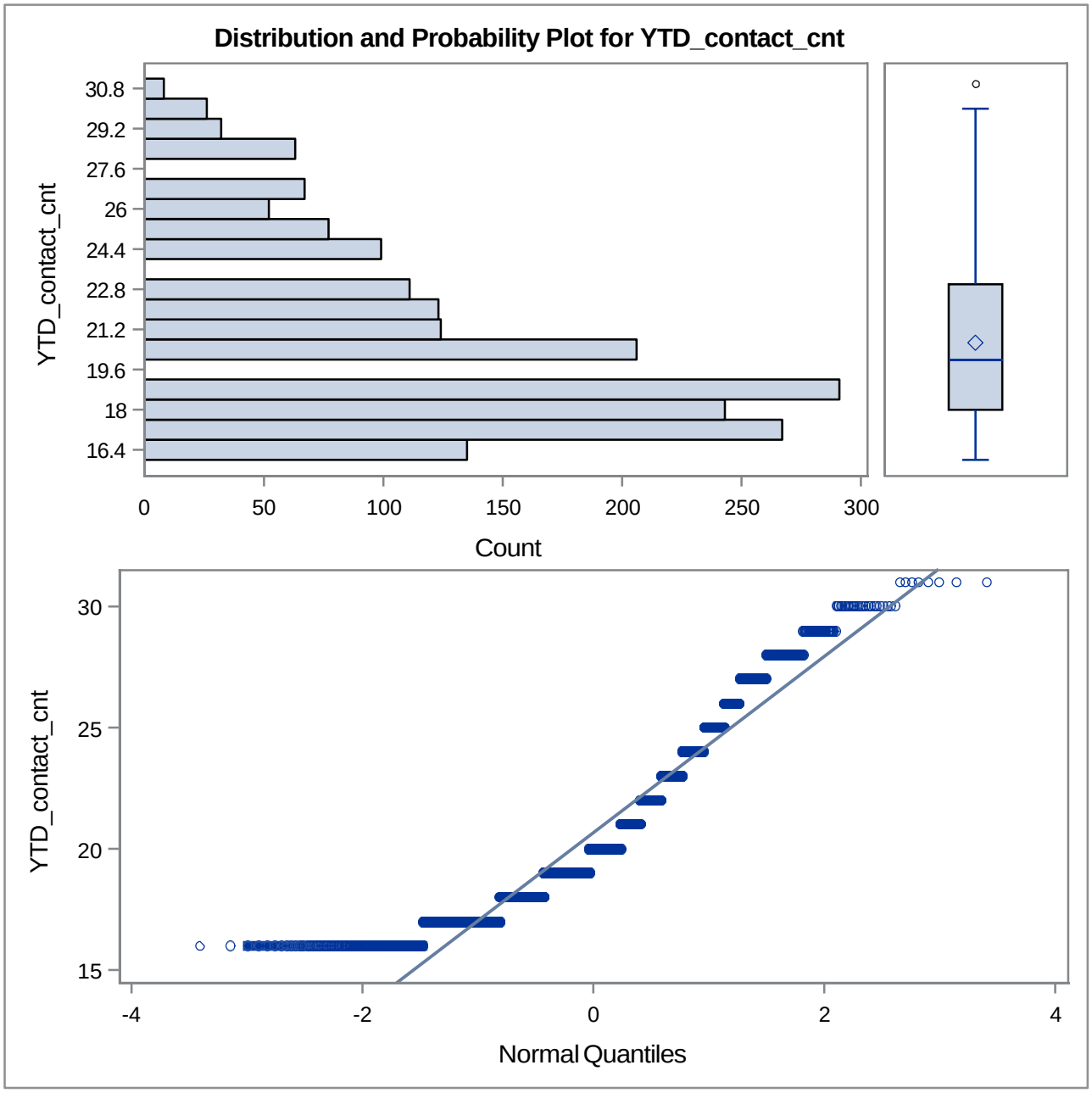
Basic Statistical Measures			
Location		**Variability**	
Mean	20.66892	**Std Deviation**	3.63694
Median	20.00000	**Variance**	13.22730
Mode	19.00000	**Range**	15.00000
		Interquartile Range	5.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	249.2784	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	31
99%	30
95%	28
90%	27
75% Q3	23
50% Median	20
25% Q1	18
10%	17
5%	16
1%	16
0% Min	16

The UNIVARIATE Procedure
Variable: YTD_contact_cnt

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
16	961	31	1430
16	947	31	1486
16	945	31	1506
16	943	31	1531
16	931	31	1592



The UNIVARIATE Procedure
Variable: Due_date_day_cnt

Moments			
N	1924	**Sum Weights**	1924
Mean	11.6496881	**Sum Observations**	22414
Std Deviation	7.56699631	**Variance**	57.2594331
Skewness	1.06616338	**Kurtosis**	0.77727348
Uncorrected SS	371226	**Corrected SS**	110109.89
Coeff Variation	64.9544967	**Std Error Mean**	0.17251267

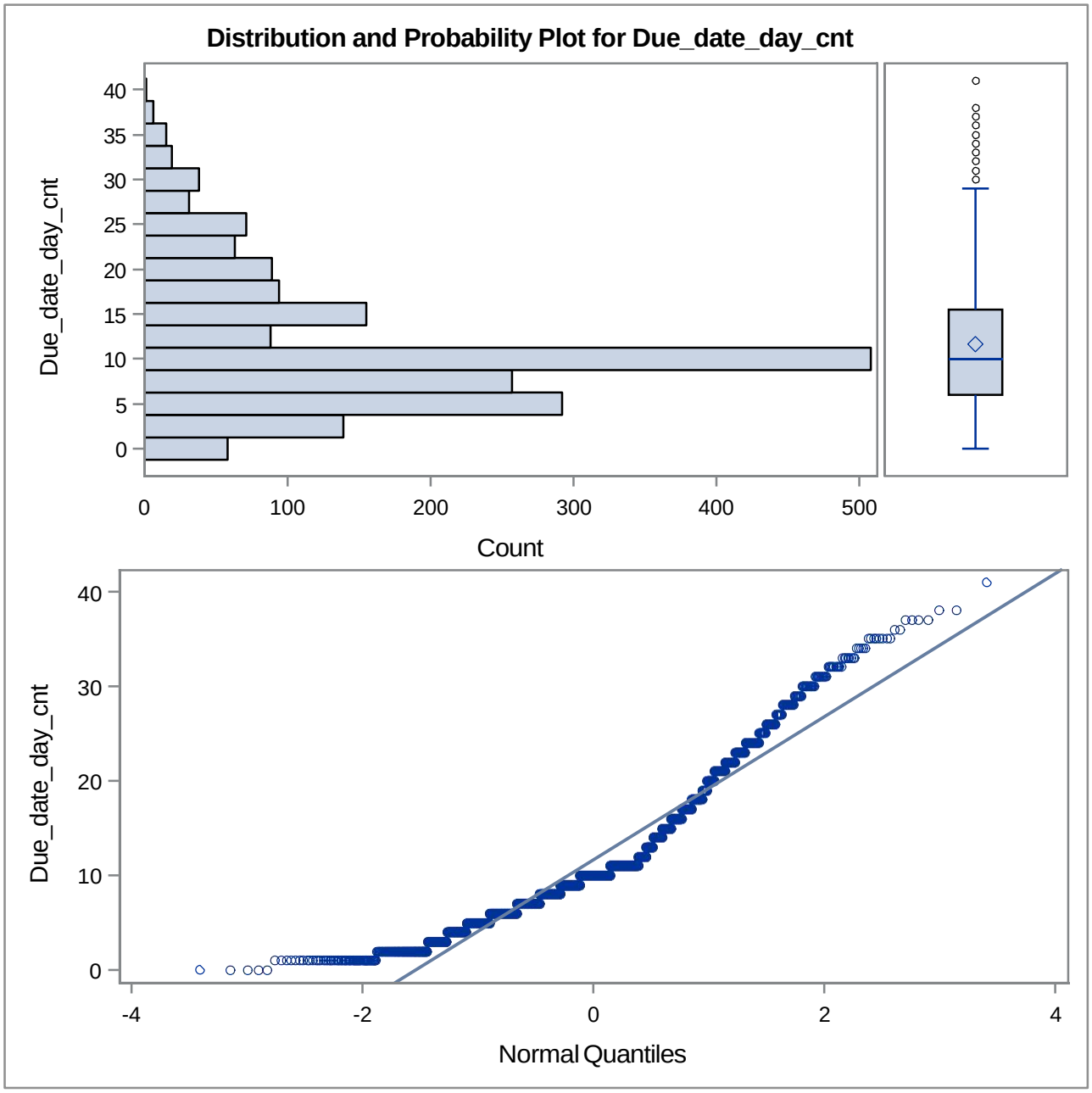
Basic Statistical Measures			
Location		**Variability**	
Mean	11.64969	**Std Deviation**	7.56700
Median	10.00000	**Variance**	57.25943
Mode	10.00000	**Range**	41.00000
		Interquartile Range	9.50000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	67.52947	**Pr > |t|**	<.0001
Sign	**M**	959.5	**Pr >= |M|**	<.0001
Signed Rank	**S**	921120	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	41.0
99%	34.0
95%	28.0
90%	23.0
75% Q3	15.5
50% Median	10.0
25% Q1	6.0
10%	3.0
5%	2.0
1%	1.0
0% Min	0.0

The UNIVARIATE Procedure
Variable: Due_date_day_cnt

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	732	37	642
0	598	37	1324
0	595	38	1594
0	241	38	1870
0	141	41	1011



The UNIVARIATE Procedure
Variable: Existing_policy_count

Moments			
N	1924	**Sum Weights**	1924
Mean	8.09303534	**Sum Observations**	15571
Std Deviation	4.32748996	**Variance**	18.7271694
Skewness	-0.0334004	**Kurtosis**	-1.1849708
Uncorrected SS	162029	**Corrected SS**	36012.3467
Coeff Variation	53.4717788	**Std Error Mean**	0.09865828

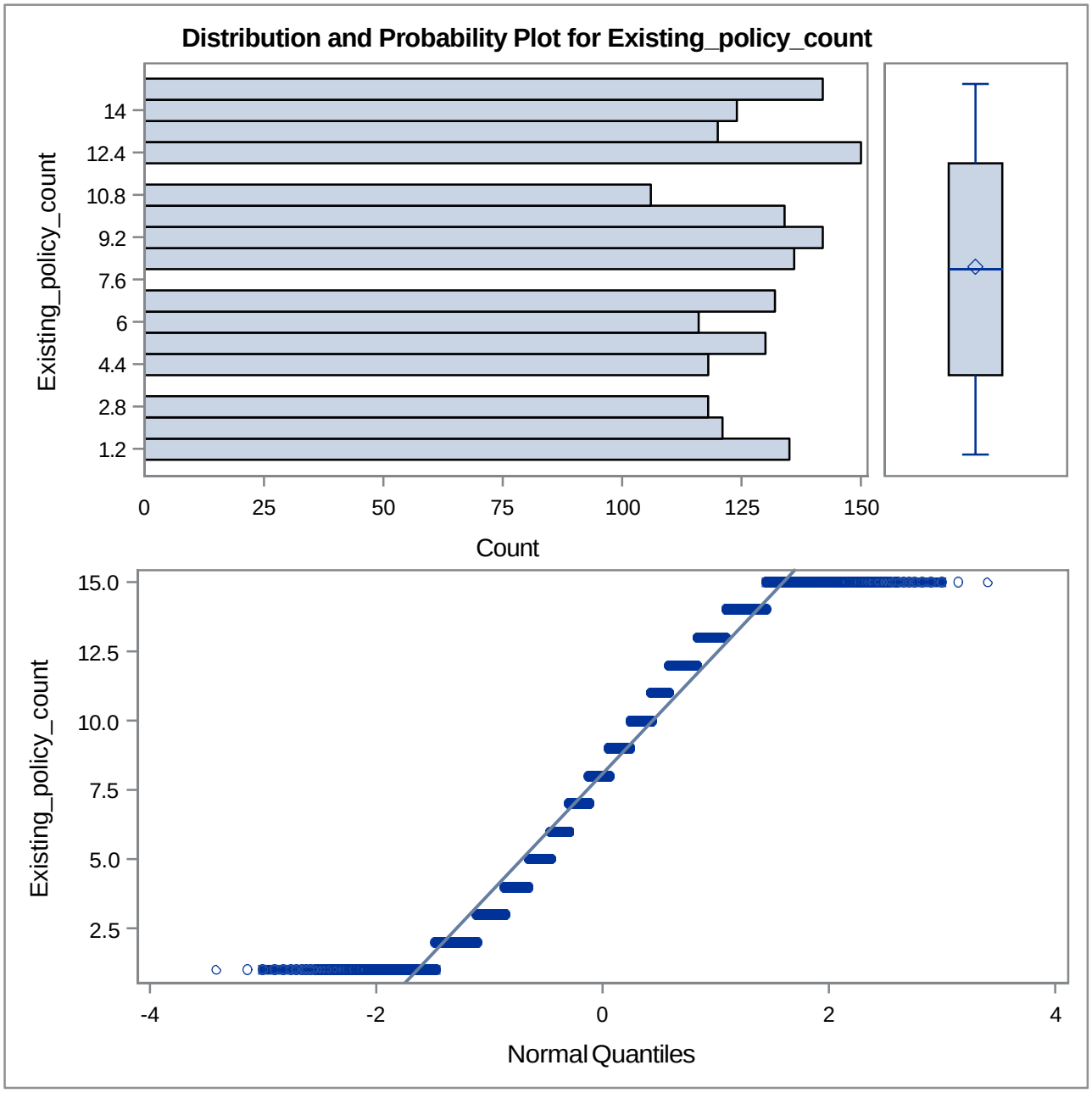
Basic Statistical Measures			
Location		**Variability**	
Mean	8.09304	**Std Deviation**	4.32749
Median	8.00000	**Variance**	18.72717
Mode	12.00000	**Range**	14.00000
		Interquartile Range	8.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	82.03098	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	15
99%	15
95%	15
90%	14
75% Q3	12
50% Median	8
25% Q1	4
10%	2
5%	1
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: Existing_policy_count

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1905	15	1868
1	1897	15	1869
1	1864	15	1876
1	1857	15	1889
1	1856	15	1906



The UNIVARIATE Procedure
Variable: Miss_due_date_cnt

Moments			
N	1924	**Sum Weights**	1924
Mean	1.8004158	**Sum Observations**	3464
Std Deviation	2.25117519	**Variance**	5.06778974
Skewness	2.09467831	**Kurtosis**	4.07297366
Uncorrected SS	15982	**Corrected SS**	9745.35967
Coeff Variation	125.036405	**Std Error Mean**	0.05132238

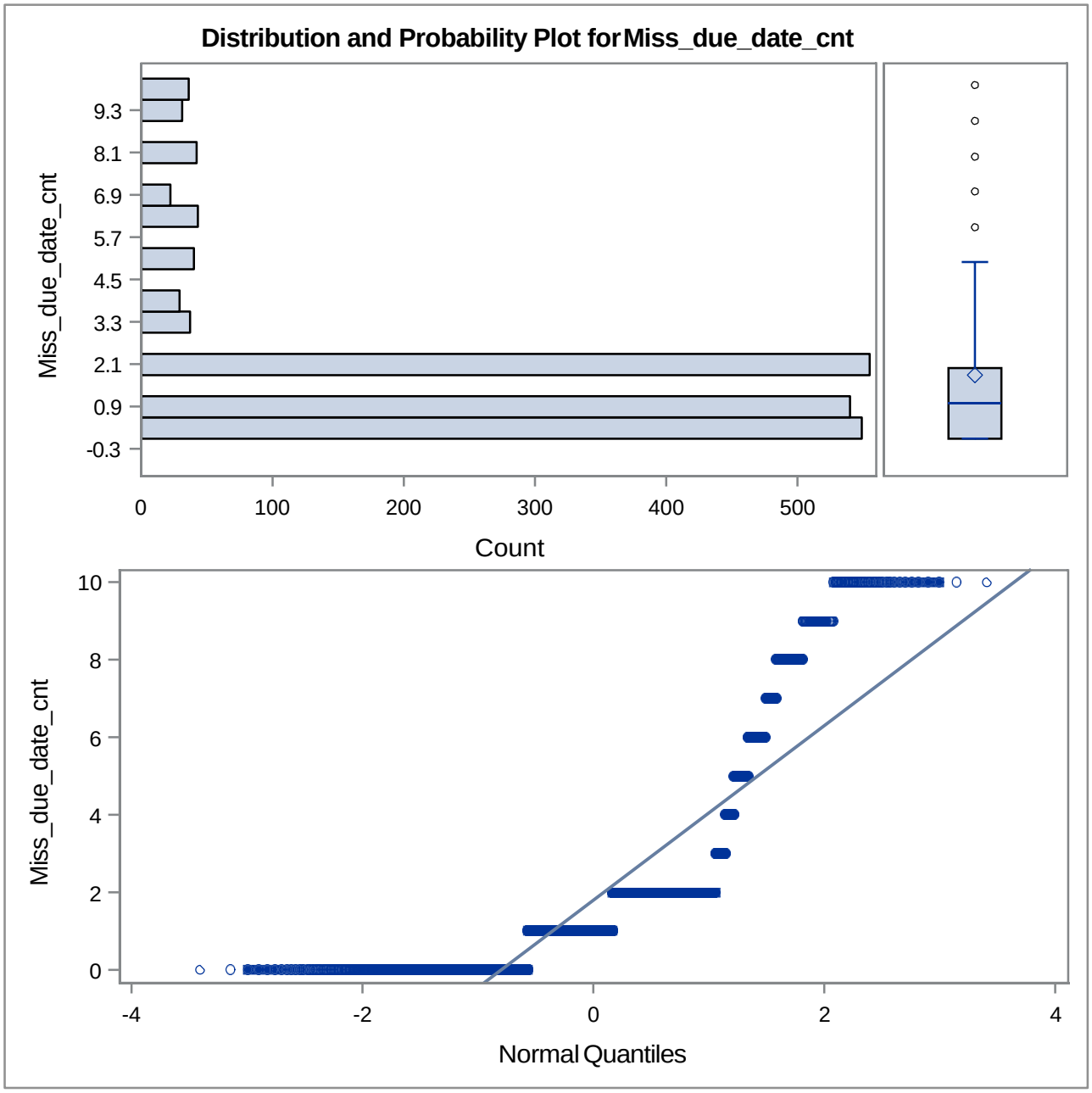
Basic Statistical Measures			
Location		**Variability**	
Mean	1.800416	**Std Deviation**	2.25118
Median	1.000000	**Variance**	5.06779
Mode	2.000000	**Range**	10.00000
		Interquartile Range	2.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	35.08052	**Pr > |t|**	<.0001
Sign	**M**	687.5	**Pr >= |M|**	<.0001
Signed Rank	**S**	473000	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	10
99%	10
95%	8
90%	5
75% Q3	2
50% Median	1
25% Q1	0
10%	0
5%	0
1%	0
0% Min	0

The UNIVARIATE Procedure
Variable: Miss_due_date_cnt

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	1923	10	1781
0	1920	10	1797
0	1918	10	1873
0	1917	10	1879
0	1916	10	1913



The UNIVARIATE Procedure
Variable: Age

Moments			
N	1924	**Sum Weights**	1924
Mean	42.6242204	**Sum Observations**	82009
Std Deviation	10.0113121	**Variance**	100.226371
Skewness	0.00576962	**Kurtosis**	-0.9543936
Uncorrected SS	3688305	**Corrected SS**	192735.311
Coeff Variation	23.4873789	**Std Error Mean**	0.22823827

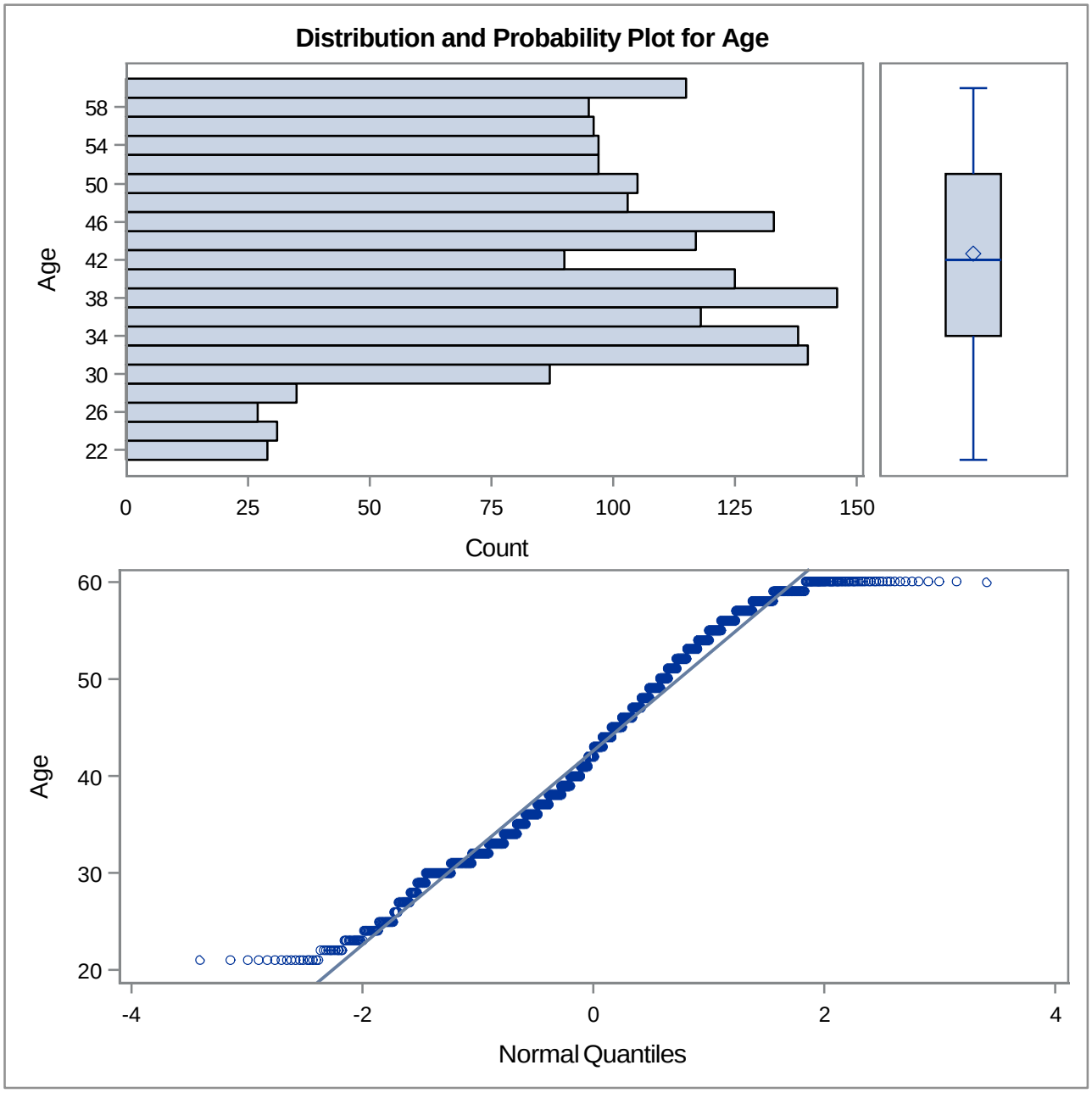
Basic Statistical Measures			
Location		**Variability**	
Mean	42.62422	**Std Deviation**	10.01131
Median	42.00000	**Variance**	100.22637
Mode	38.00000	**Range**	39.00000
		Interquartile Range	17.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	186.7532	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	60
99%	60
95%	59
90%	57
75% Q3	51
50% Median	42
25% Q1	34
10%	30
5%	27
1%	22
0% Min	21

The UNIVARIATE Procedure
Variable: Age

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
21	1764	60	1777
21	1712	60	1823
21	1648	60	1877
21	1637	60	1903
21	1596	60	1905



The UNIVARIATE Procedure
Variable: Cust_Tenure

Moments			
N	1924	**Sum Weights**	1924
Mean	12.6486486	**Sum Observations**	24336
Std Deviation	7.01534187	**Variance**	49.2150216
Skewness	0.18921756	**Kurtosis**	-1.2031407
Uncorrected SS	402458	**Corrected SS**	94640.4865
Coeff Variation	55.4631729	**Std Error Mean**	0.15993603

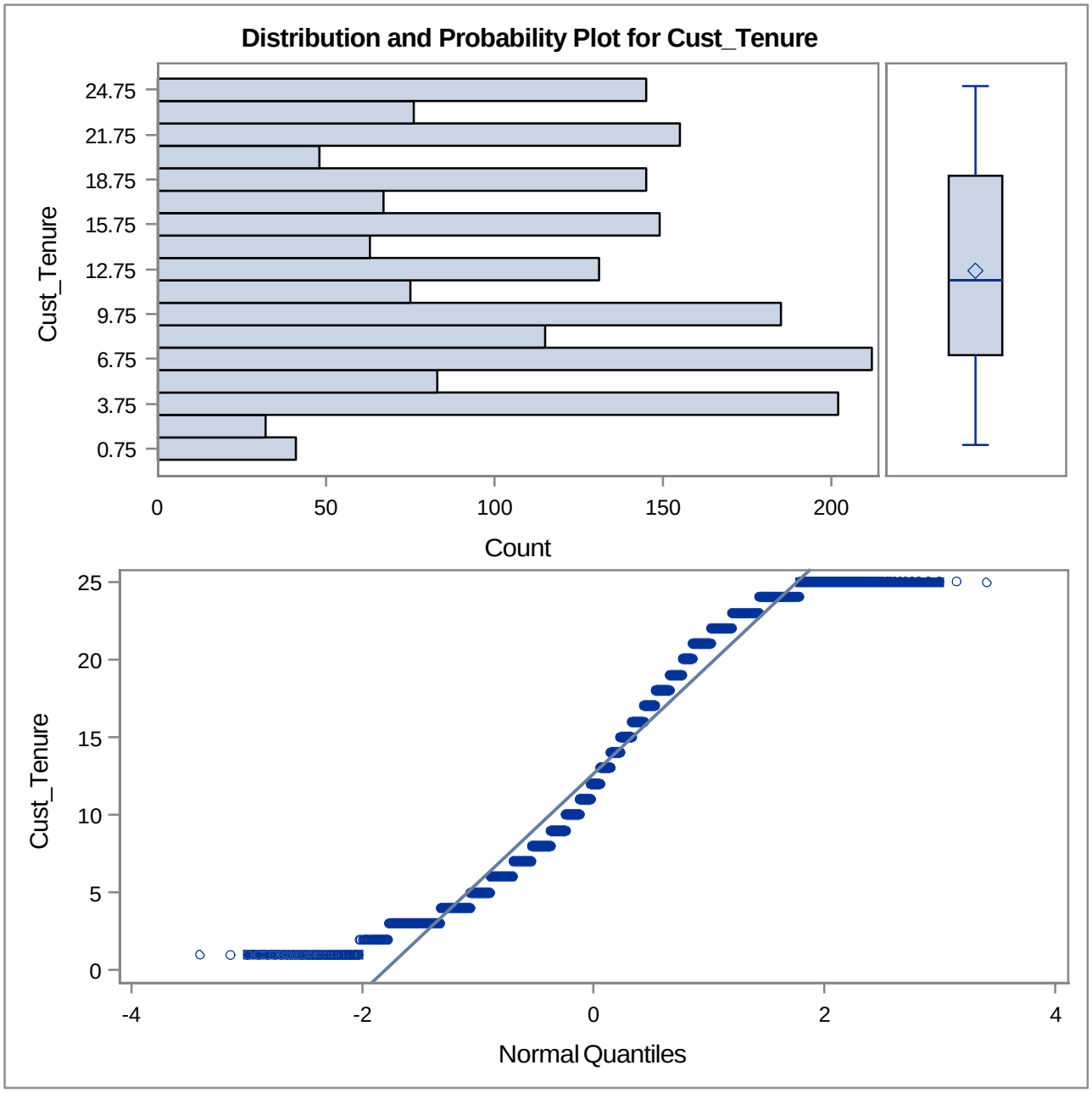
Basic Statistical Measures			
Location		**Variability**	
Mean	12.64865	**Std Deviation**	7.01534
Median	12.00000	**Variance**	49.21502
Mode	8.00000	**Range**	24.00000
		Interquartile Range	12.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	79.08567	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	25
99%	25
95%	24
90%	23
75% Q3	19
50% Median	12
25% Q1	7
10%	4
5%	3
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: Cust_Tenure

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1921	25	1820
1	1882	25	1837
1	1853	25	1886
1	1834	25	1903
1	1814	25	1905



The UNIVARIATE Procedure
Variable: Overall_cust_satisfation_score

Moments			
N	1924	**Sum Weights**	1924
Mean	3.39553015	**Sum Observations**	6533
Std Deviation	1.18053232	**Variance**	1.39365656
Skewness	-0.1158404	**Kurtosis**	-1.1124382
Uncorrected SS	24863	**Corrected SS**	2680.00156
Coeff Variation	34.767246	**Std Error Mean**	0.02691382

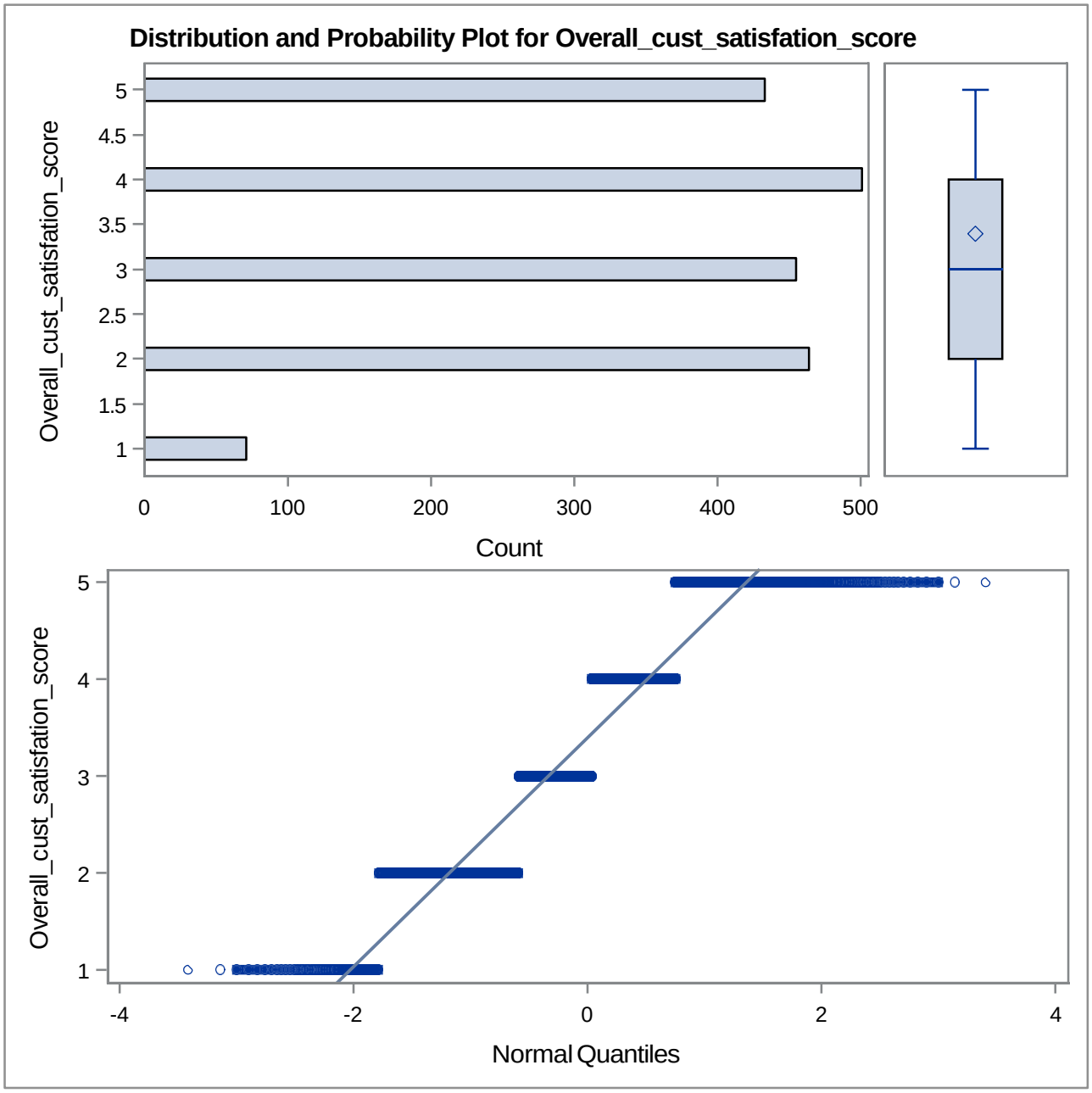
Basic Statistical Measures			
Location		**Variability**	
Mean	3.395530	**Std Deviation**	1.18053
Median	3.000000	**Variance**	1.39366
Mode	4.000000	**Range**	4.00000
		Interquartile Range	2.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	126.1631	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	5
99%	5
95%	5
90%	5
75% Q3	4
50% Median	3
25% Q1	2
10%	2
5%	2
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: Overall_cust_satisfation_score

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1888	5	1911
1	1885	5	1915
1	1874	5	1918
1	1856	5	1919
1	1788	5	1920



The UNIVARIATE Procedure
Variable: CC_Satisfation_score

Moments			
N	1924	**Sum Weights**	1924
Mean	3.0514553	**Sum Observations**	5871
Std Deviation	1.36631832	**Variance**	1.86682575
Skewness	-0.123559	**Kurtosis**	-1.1147222
Uncorrected SS	21505	**Corrected SS**	3589.90593
Coeff Variation	44.7759572	**Std Error Mean**	0.03114938

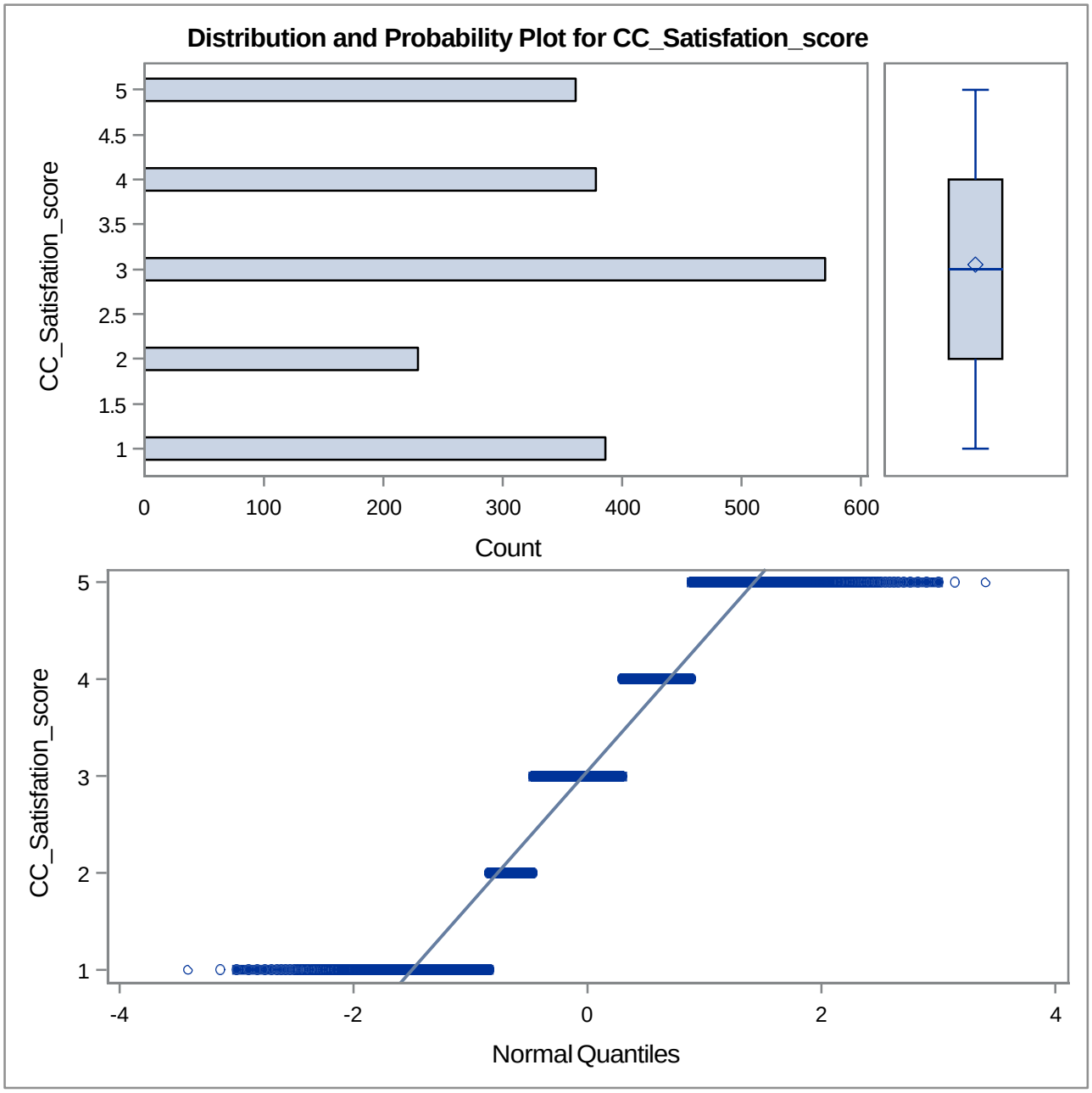
Basic Statistical Measures			
Location		**Variability**	
Mean	3.051455	**Std Deviation**	1.36632
Median	3.000000	**Variance**	1.86683
Mode	3.000000	**Range**	4.00000
		Interquartile Range	2.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	97.962	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	5
99%	5
95%	5
90%	5
75% Q3	4
50% Median	3
25% Q1	2
10%	1
5%	1
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: CC_Satisfation_score

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1923	5	1895
1	1922	5	1901
1	1916	5	1905
1	1911	5	1915
1	1910	5	1921



The UNIVARIATE Procedure
Variable: Cust_Income

Moments			
N	1924	**Sum Weights**	1924
Mean	21960.4288	**Sum Observations**	42251865
Std Deviation	4717.89005	**Variance**	22258486.5
Skewness	1.34553307	**Kurtosis**	0.96607181
Uncorrected SS	9.70672E11	**Corrected SS**	4.28031E10
Coeff Variation	21.4835971	**Std Error Mean**	107.558635

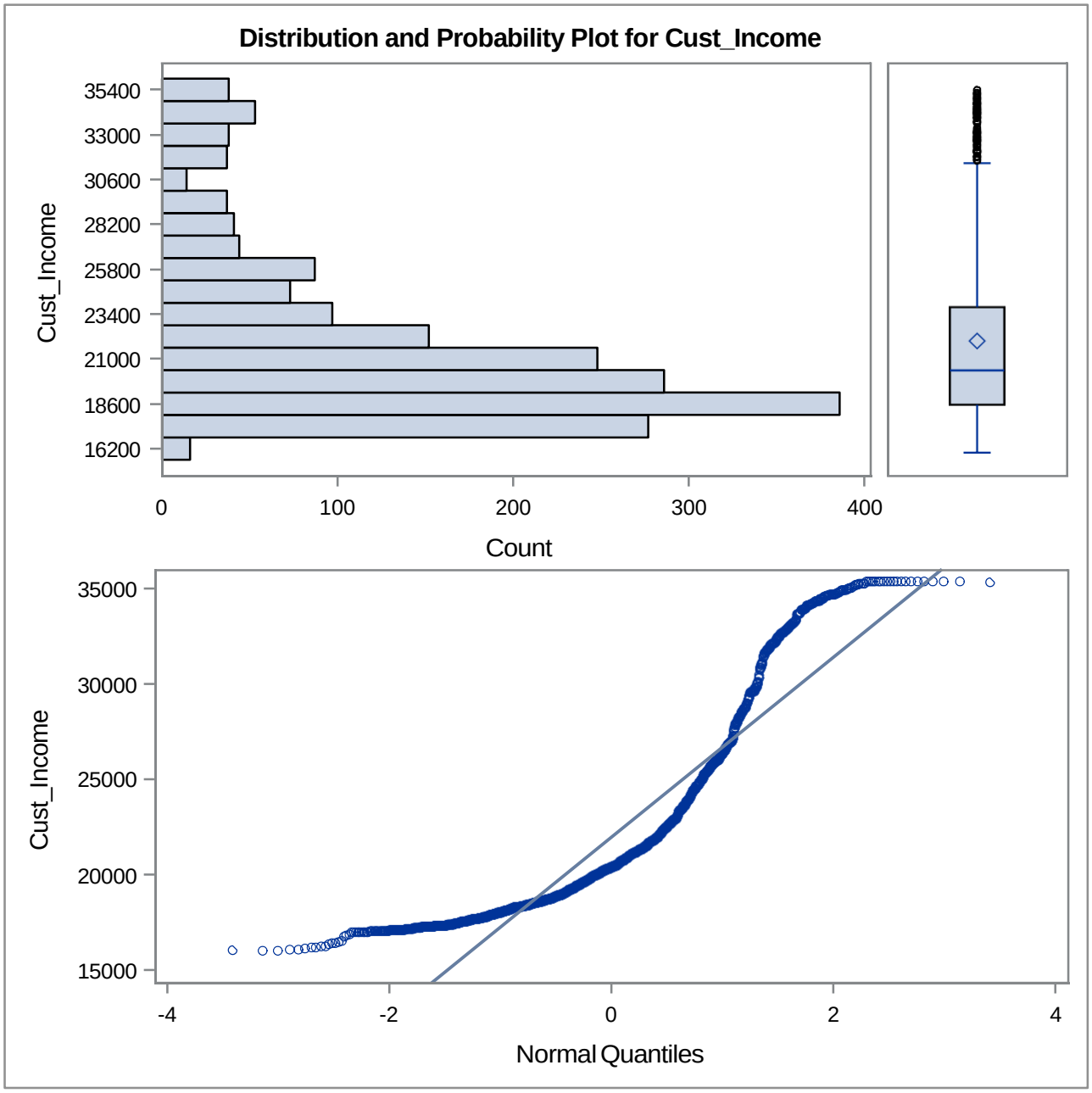
Basic Statistical Measures			
Location		**Variability**	
Mean	21960.43	**Std Deviation**	4718
Median	20391.50	**Variance**	22258486
Mode	35331.00	**Range**	19322
		Interquartile Range	5212

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	204.1717	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	35331.0
99%	35331.0
95%	33159.0
90%	29582.0
75% Q3	23767.5
50% Median	20391.5
25% Q1	18556.0
10%	17619.0
5%	17296.0
1%	17001.0
0% Min	16009.0

The UNIVARIATE Procedure
Variable: Cust_Income

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
16009	160	35331	1608
16051	732	35331	1701
16051	241	35331	1728
16091	935	35331	1819
16102	559	35331	1878



The UNIVARIATE Procedure
Variable: Agent_Tenure

Moments			
N	1924	**Sum Weights**	1924
Mean	3.16320166	**Sum Observations**	6086
Std Deviation	2.50124822	**Variance**	6.25624268
Skewness	0.9674889	**Kurtosis**	0.04843355
Uncorrected SS	31282	**Corrected SS**	12030.7547
Coeff Variation	79.073309	**Std Error Mean**	0.05702355

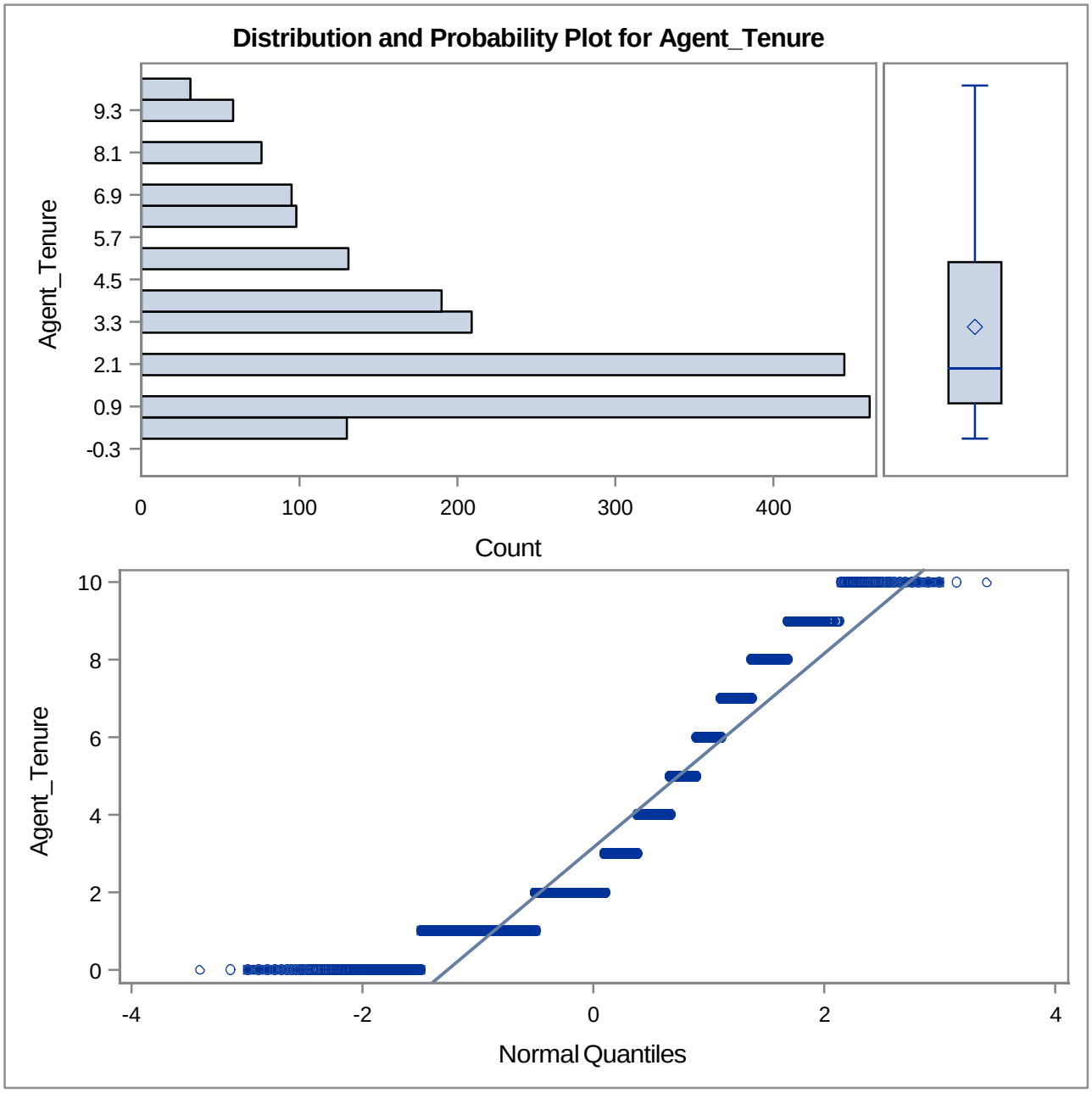
Basic Statistical Measures			
Location		**Variability**	
Mean	3.163202	**Std Deviation**	2.50125
Median	2.000000	**Variance**	6.25624
Mode	1.000000	**Range**	10.00000
		Interquartile Range	4.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	55.47185	**Pr > |t|**	<.0001
Sign	**M**	897	**Pr >= |M|**	<.0001
Signed Rank	**S**	805057.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	10
99%	10
95%	8
90%	7
75% Q3	5
50% Median	2
25% Q1	1
10%	1
5%	0
1%	0
0% Min	0

The UNIVARIATE Procedure
Variable: Agent_Tenure

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	962	10	1687
0	952	10	1701
0	951	10	1721
0	942	10	1840
0	941	10	1856



The UNIVARIATE Procedure
Variable: Complaint

Moments			
N	1924	**Sum Weights**	1924
Mean	0.28898129	**Sum Observations**	556
Std Deviation	0.45340705	**Variance**	0.20557795
Skewness	0.93178213	**Kurtosis**	-1.1329609
Uncorrected SS	556	**Corrected SS**	395.326403
Coeff Variation	156.898411	**Std Error Mean**	0.01033679

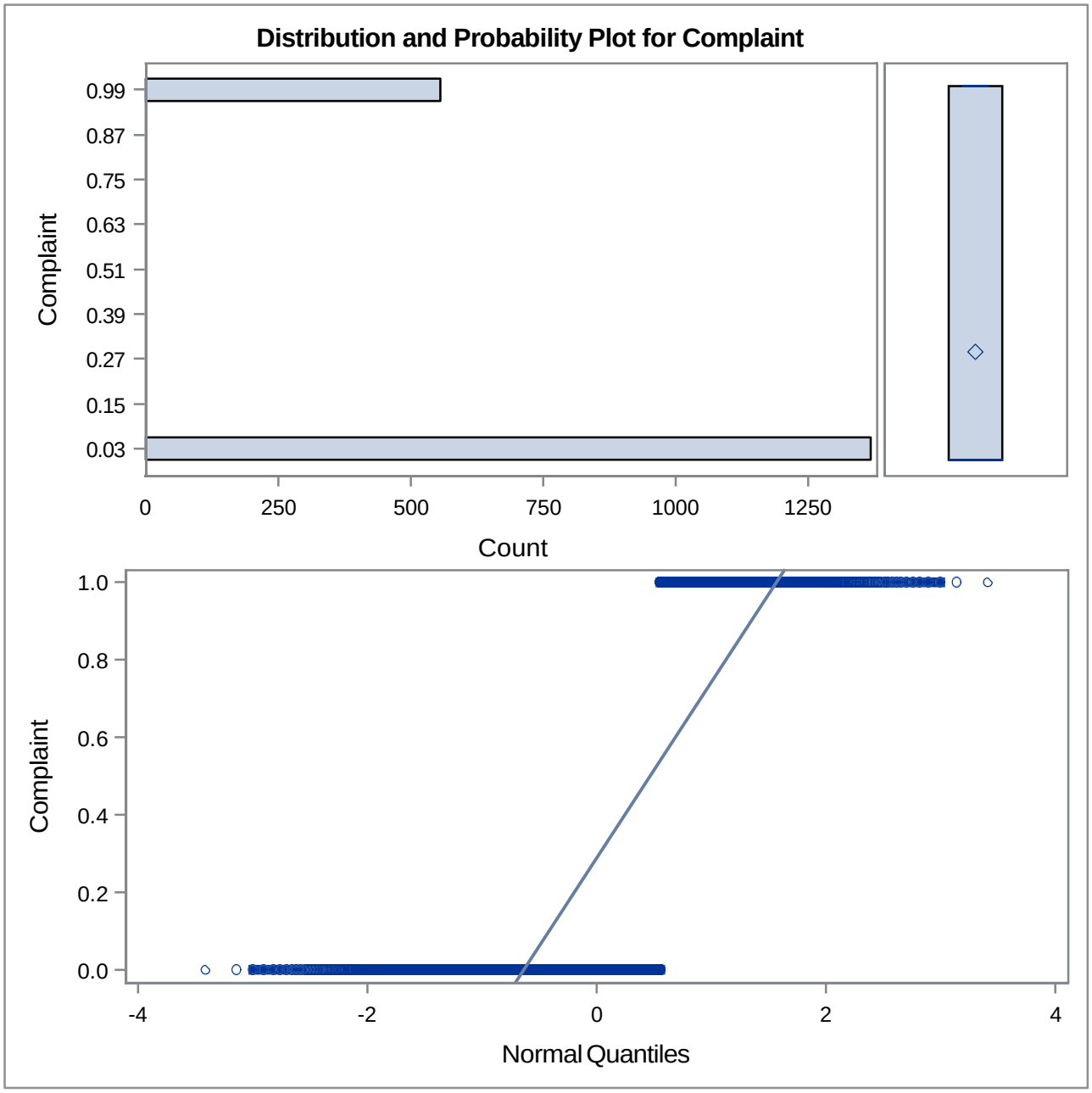
Basic Statistical Measures			
Location		**Variability**	
Mean	0.288981	**Std Deviation**	0.45341
Median	0.000000	**Variance**	0.20558
Mode	0.000000	**Range**	1.00000
		Interquartile Range	1.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	27.95658	**Pr > |t|**	<.0001
Sign	**M**	278	**Pr >= |M|**	<.0001
Signed Rank	**S**	77423	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	1
99%	1
95%	1
90%	1
75% Q3	1
50% Median	0
25% Q1	0
10%	0
5%	0
1%	0
0% Min	0

The UNIVARIATE Procedure
Variable: Complaint

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	1923	1	1908
0	1922	1	1916
0	1920	1	1919
0	1918	1	1921
0	1917	1	1924



The UNIVARIATE Procedure
Variable: YTD_contact_cnt

Moments			
N	1924	**Sum Weights**	1924
Mean	20.6647609	**Sum Observations**	39759
Std Deviation	3.62567051	**Variance**	13.1454866
Skewness	0.816984	**Kurtosis**	-0.2429293
Uncorrected SS	846889	**Corrected SS**	25278.7708
Coeff Variation	17.5451849	**Std Error Mean**	0.08265817

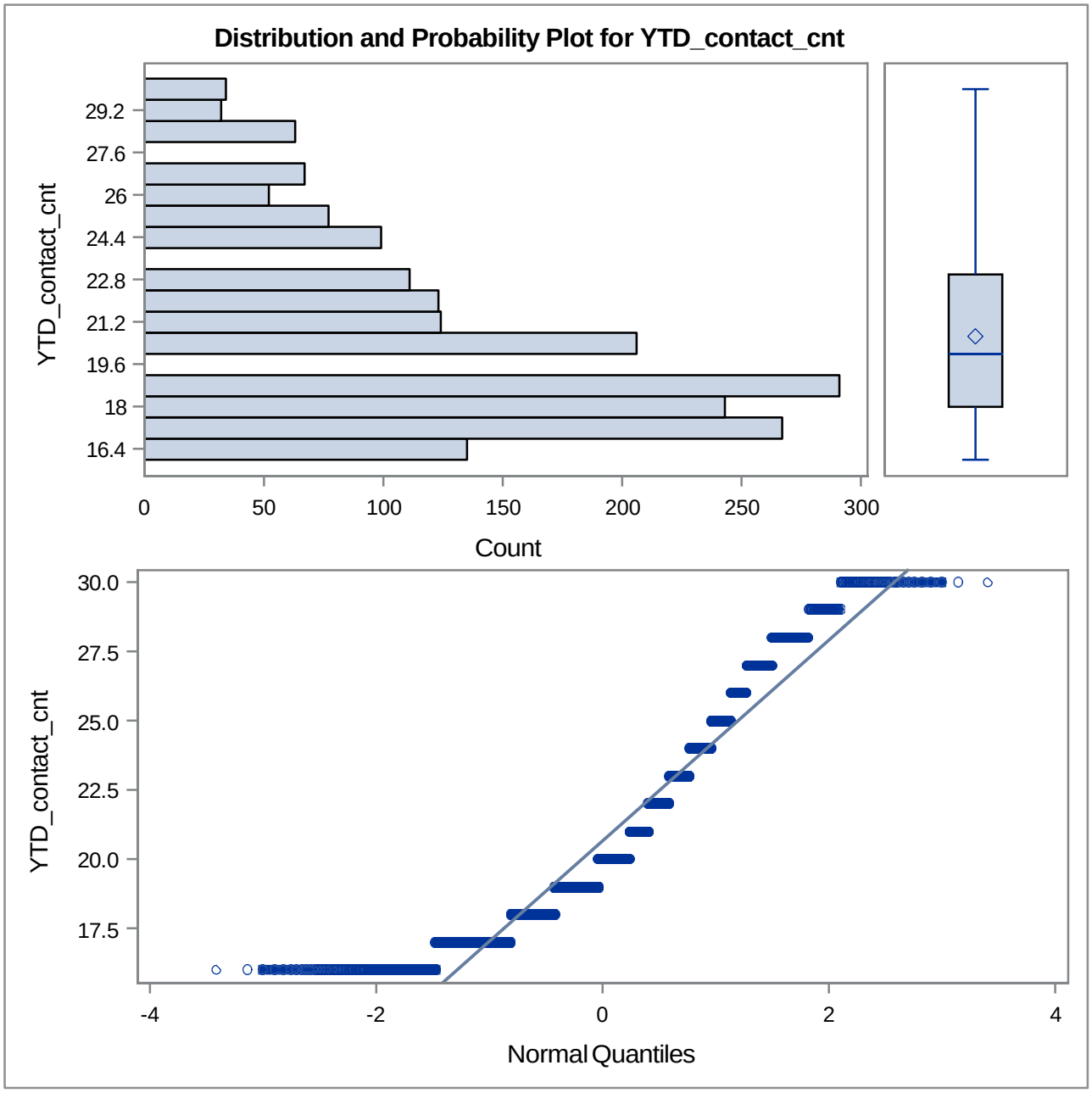
Basic Statistical Measures			
Location		**Variability**	
Mean	20.66476	**Std Deviation**	3.62567
Median	20.00000	**Variance**	13.14549
Mode	19.00000	**Range**	14.00000
		Interquartile Range	5.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	250.0026	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	30
99%	30
95%	28
90%	27
75% Q3	23
50% Median	20
25% Q1	18
10%	17
5%	16
1%	16
0% Min	16

The UNIVARIATE Procedure
Variable: YTD_contact_cnt

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
16	961	30	1786
16	947	30	1828
16	945	30	1829
16	943	30	1879
16	931	30	1897



The UNIVARIATE Procedure
Variable: Due_date_day_cnt

Moments			
N	1924	**Sum Weights**	1924
Mean	11.6294179	**Sum Observations**	22375
Std Deviation	7.50221929	**Variance**	56.2832943
Skewness	1.01834248	**Kurtosis**	0.55871112
Uncorrected SS	368441	**Corrected SS**	108232.775
Coeff Variation	64.5107035	**Std Error Mean**	0.17103588

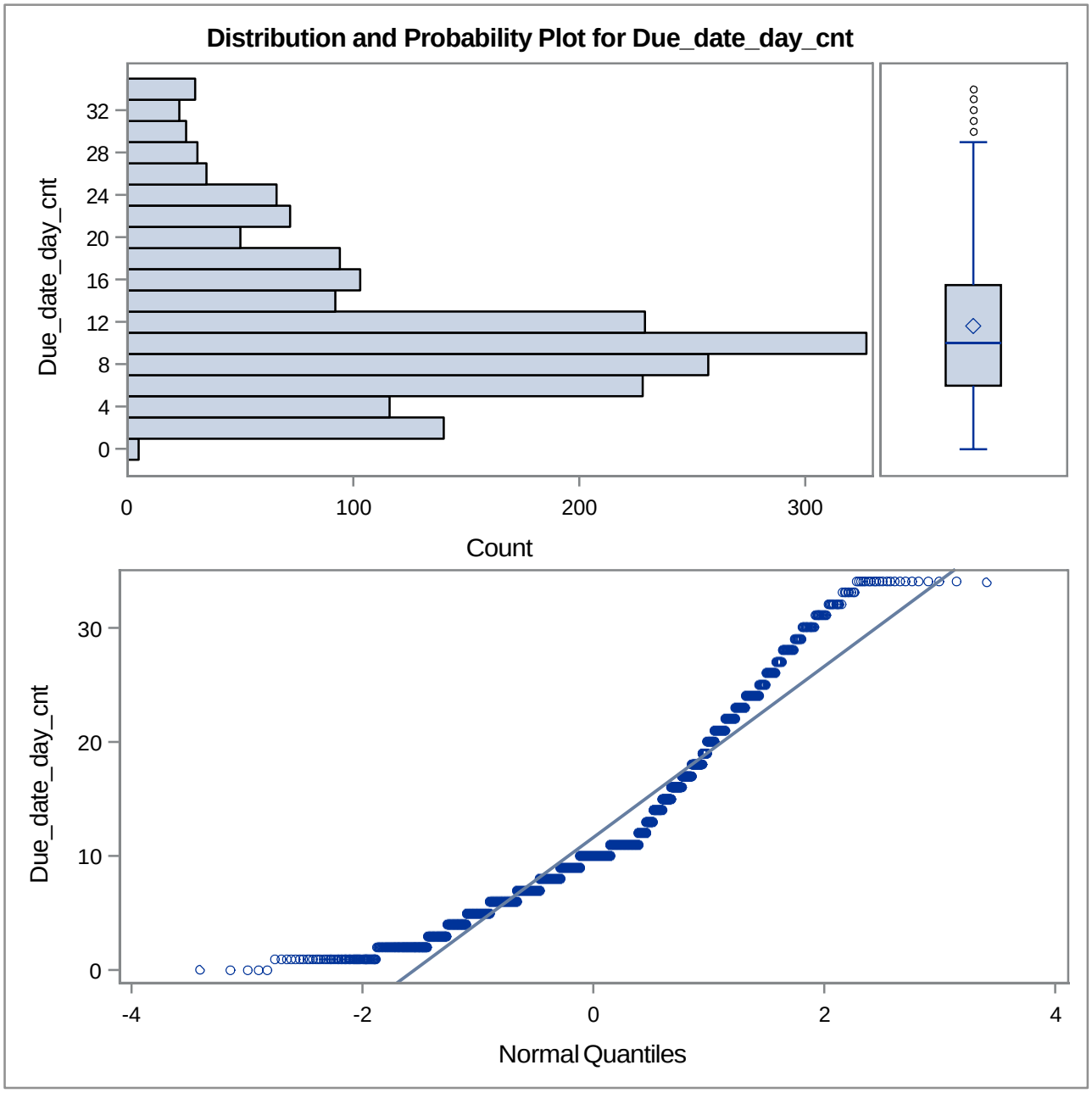
Basic Statistical Measures			
Location		**Variability**	
Mean	11.62942	**Std Deviation**	7.50222
Median	10.00000	**Variance**	56.28329
Mode	10.00000	**Range**	34.00000
		Interquartile Range	9.50000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	67.99403	**Pr > |t|**	<.0001
Sign	**M**	959.5	**Pr >= |M|**	<.0001
Signed Rank	**S**	921120	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	34.0
99%	34.0
95%	28.0
90%	23.0
75% Q3	15.5
50% Median	10.0
25% Q1	6.0
10%	3.0
5%	2.0
1%	1.0
0% Min	0.0

The UNIVARIATE Procedure
Variable: Due_date_day_cnt

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	732	34	1625
0	598	34	1655
0	595	34	1746
0	241	34	1805
0	141	34	1870



The UNIVARIATE Procedure
Variable: Existing_policy_count

Moments			
N	1924	**Sum Weights**	1924
Mean	8.09303534	**Sum Observations**	15571
Std Deviation	4.32748996	**Variance**	18.7271694
Skewness	-0.0334004	**Kurtosis**	-1.1849708
Uncorrected SS	162029	**Corrected SS**	36012.3467
Coeff Variation	53.4717788	**Std Error Mean**	0.09865828

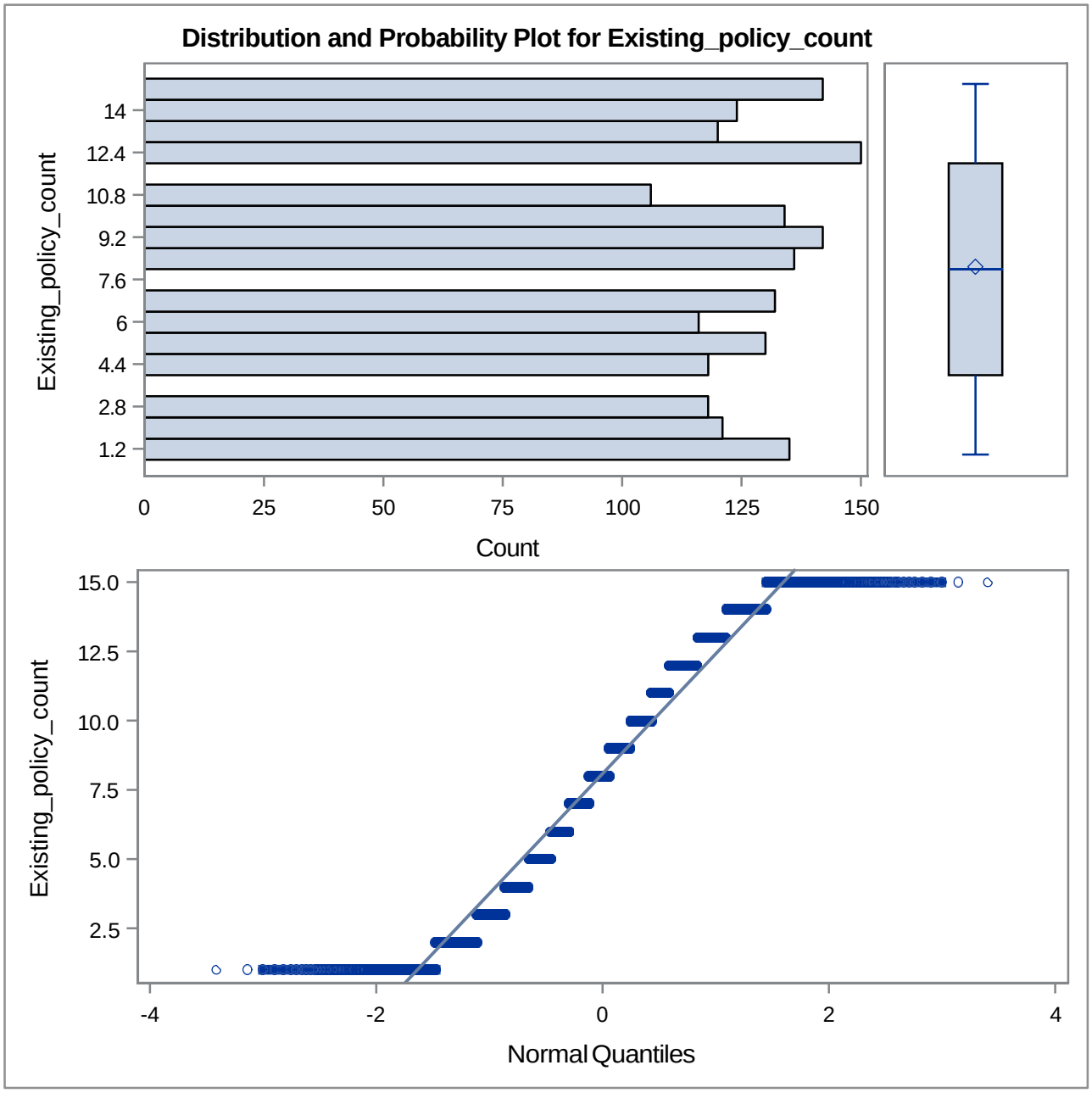
Basic Statistical Measures			
Location		**Variability**	
Mean	8.09304	**Std Deviation**	4.32749
Median	8.00000	**Variance**	18.72717
Mode	12.00000	**Range**	14.00000
		Interquartile Range	8.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	82.03098	**Pr > |t|**	<.0001
Sign	**M**	962	**Pr >= |M|**	<.0001
Signed Rank	**S**	925925	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	15
99%	15
95%	15
90%	14
75% Q3	12
50% Median	8
25% Q1	4
10%	2
5%	1
1%	1
0% Min	1

The UNIVARIATE Procedure
Variable: Existing_policy_count

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
1	1905	15	1868
1	1897	15	1869
1	1864	15	1876
1	1857	15	1889
1	1856	15	1906



The UNIVARIATE Procedure
Variable: Miss_due_date_cnt

Moments			
N	1924	**Sum Weights**	1924
Mean	1.8004158	**Sum Observations**	3464
Std Deviation	2.25117519	**Variance**	5.06778974
Skewness	2.09467831	**Kurtosis**	4.07297366
Uncorrected SS	15982	**Corrected SS**	9745.35967
Coeff Variation	125.036405	**Std Error Mean**	0.05132238

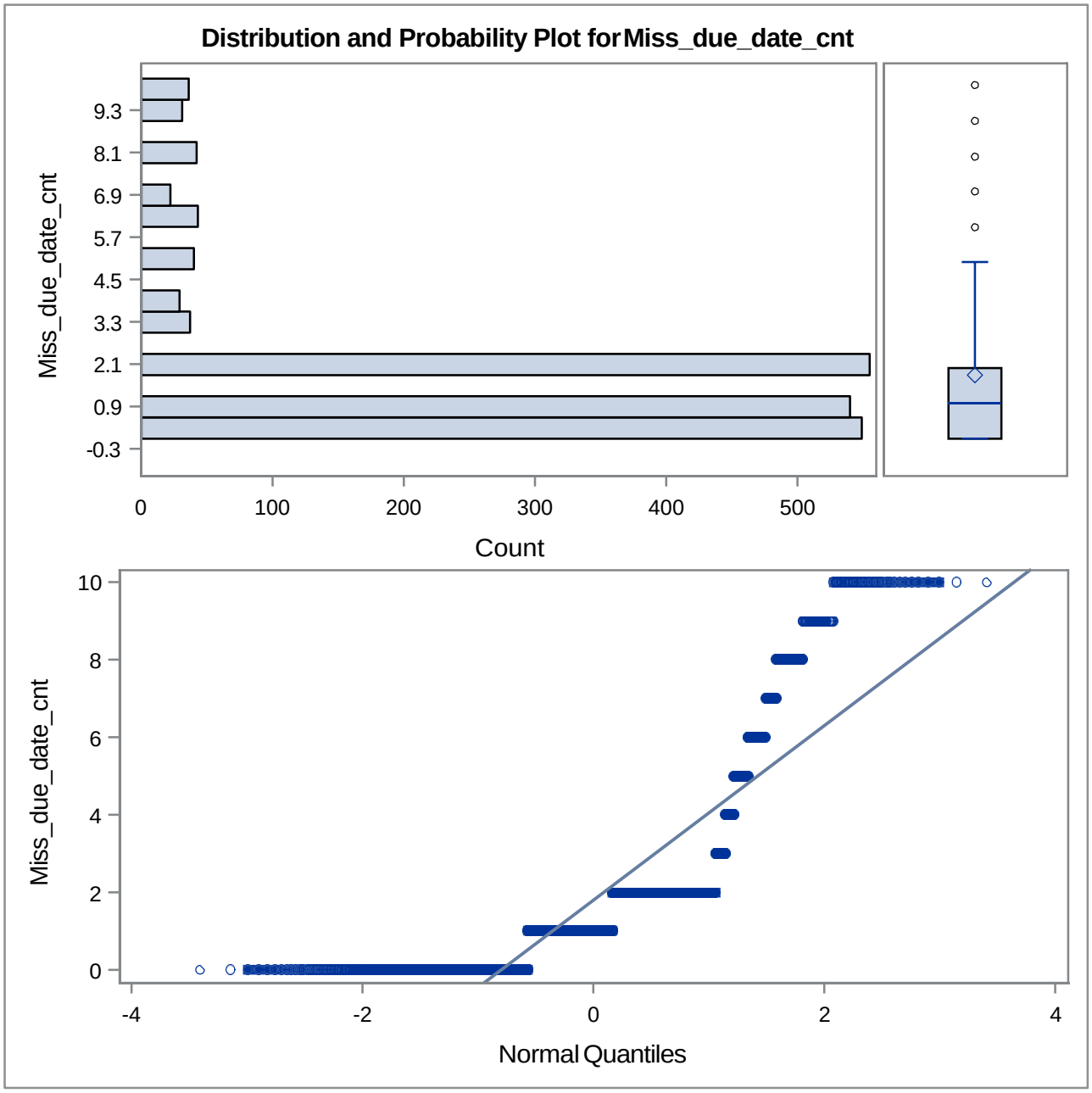
Basic Statistical Measures			
Location		**Variability**	
Mean	1.800416	**Std Deviation**	2.25118
Median	1.000000	**Variance**	5.06779
Mode	2.000000	**Range**	10.00000
		Interquartile Range	2.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	35.08052	**Pr > |t|**	<.0001
Sign	**M**	687.5	**Pr >= |M|**	<.0001
Signed Rank	**S**	473000	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	10
99%	10
95%	8
90%	5
75% Q3	2
50% Median	1
25% Q1	0
10%	0
5%	0
1%	0
0% Min	0

The UNIVARIATE Procedure
Variable: Miss_due_date_cnt

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	1923	10	1781
0	1920	10	1797
0	1918	10	1873
0	1917	10	1879
0	1916	10	1913



The FREQ Procedure

Age	Frequency	Percent
21	17	0.88
22	12	0.62
23	15	0.78
24	16	0.83
25	20	1.04
26	7	0.36
27	21	1.09
28	14	0.73
29	19	0.99
30	68	3.53
31	72	3.74
32	68	3.53
33	72	3.74
34	66	3.43
35	48	2.49
36	70	3.64
37	68	3.53
38	78	4.05
39	56	2.91
40	69	3.59
41	50	2.60
42	40	2.08
43	57	2.96
44	60	3.12
45	66	3.43
46	67	3.48
47	55	2.86
48	48	2.49
49	62	3.22
50	43	2.23
51	46	2.39
52	51	2.65
53	50	2.60
54	47	2.44
55	48	2.49
56	48	2.49
57	48	2.49

The FREQ Procedure

Age	Frequency	Percent
58	47	2.44
59	51	2.65
60	64	3.33

Cust_Tenure	Frequency	Percent
1	41	2.13
2	32	1.66
3	105	5.46
4	97	5.04
5	83	4.31
6	110	5.72
7	102	5.30
8	115	5.98
9	95	4.94
10	90	4.68
11	75	3.90
12	62	3.22
13	69	3.59
14	63	3.27
15	73	3.79
16	76	3.95
17	67	3.48
18	79	4.11
19	66	3.43
20	48	2.49
21	79	4.11
22	76	3.95
23	76	3.95
24	74	3.85
25	71	3.69

Overall_cust_satisfation_score	Frequency	Percent
1	71	3.69
2	464	24.12
3	455	23.65

The FREQ Procedure

Overall_cust_satisfation_score	Frequency	Percent
4	501	26.04
5	433	22.51

The FREQ Procedure

Cust_Income	Frequency	Percent
16009	1	0.05
16051	2	0.10
16091	1	0.05
16102	1	0.05
16129	1	0.05
16200	1	0.05
16223	1	0.05
16261	1	0.05
16281	1	0.05
16393	1	0.05
16416	1	0.05
16420	1	0.05
16483	1	0.05
16555	1	0.05
16790	1	0.05
16859	1	0.05
16878	1	0.05
17001	2	0.10
17007	1	0.05
17009	1	0.05
17011	1	0.05
17013	1	0.05
17014	1	0.05
17018	1	0.05
17028	2	0.10
17033	1	0.05
17042	1	0.05
17044	1	0.05
17045	1	0.05
17052	2	0.10
17058	1	0.05
17064	1	0.05
17066	1	0.05
17073	1	0.05
17074	2	0.10
17075	1	0.05
17081	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
17083	1	0.05
17091	1	0.05
17096	1	0.05
17099	1	0.05
17102	2	0.10
17109	2	0.10
17115	1	0.05
17118	1	0.05
17121	1	0.05
17127	2	0.10
17129	2	0.10
17132	1	0.05
17145	2	0.10
17153	1	0.05
17157	1	0.05
17166	1	0.05
17174	1	0.05
17177	4	0.21
17194	1	0.05
17200	1	0.05
17201	1	0.05
17210	1	0.05
17216	1	0.05
17218	1	0.05
17223	1	0.05
17231	1	0.05
17232	2	0.10
17238	1	0.05
17244	1	0.05
17258	3	0.16
17261	1	0.05
17269	1	0.05
17274	1	0.05
17275	2	0.10
17277	2	0.10
17281	2	0.10
17288	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
17289	1	0.05
17296	2	0.10
17297	2	0.10
17302	1	0.05
17305	1	0.05
17307	2	0.10
17311	1	0.05
17313	2	0.10
17314	1	0.05
17318	1	0.05
17323	3	0.16
17326	1	0.05
17328	1	0.05
17329	1	0.05
17339	2	0.10
17340	1	0.05
17341	1	0.05
17342	4	0.21
17345	1	0.05
17351	1	0.05
17356	1	0.05
17362	2	0.10
17366	2	0.10
17367	1	0.05
17370	2	0.10
17372	1	0.05
17373	1	0.05
17377	1	0.05
17379	1	0.05
17380	2	0.10
17387	1	0.05
17389	1	0.05
17394	2	0.10
17404	2	0.10
17406	2	0.10
17413	1	0.05
17416	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
17420	1	0.05
17422	1	0.05
17430	1	0.05
17432	2	0.10
17436	1	0.05
17440	2	0.10
17451	3	0.16
17461	1	0.05
17468	2	0.10
17472	1	0.05
17514	3	0.16
17515	2	0.10
17523	1	0.05
17532	1	0.05
17539	1	0.05
17546	2	0.10
17552	1	0.05
17559	2	0.10
17564	2	0.10
17566	1	0.05
17569	1	0.05
17570	1	0.05
17571	1	0.05
17572	1	0.05
17576	1	0.05
17580	1	0.05
17585	1	0.05
17587	1	0.05
17600	2	0.10
17601	1	0.05
17610	1	0.05
17611	1	0.05
17619	1	0.05
17622	1	0.05
17642	1	0.05
17645	1	0.05
17647	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
17654	1	0.05
17655	1	0.05
17657	3	0.16
17661	2	0.10
17662	1	0.05
17675	1	0.05
17678	2	0.10
17679	1	0.05
17683	1	0.05
17684	1	0.05
17686	1	0.05
17691	1	0.05
17693	1	0.05
17696	1	0.05
17700	2	0.10
17703	3	0.16
17706	1	0.05
17713	2	0.10
17718	2	0.10
17720	2	0.10
17723	2	0.10
17728	1	0.05
17741	1	0.05
17743	2	0.10
17756	1	0.05
17759	2	0.10
17766	1	0.05
17768	1	0.05
17773	1	0.05
17782	1	0.05
17783	2	0.10
17789	2	0.10
17791	1	0.05
17794	1	0.05
17800	1	0.05
17804	1	0.05
17809	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
17810	1	0.05
17811	1	0.05
17814	2	0.10
17818	1	0.05
17819	1	0.05
17835	1	0.05
17838	2	0.10
17859	2	0.10
17862	1	0.05
17867	2	0.10
17875	1	0.05
17886	2	0.10
17889	1	0.05
17897	2	0.10
17899	1	0.05
17904	1	0.05
17909	2	0.10
17911	1	0.05
17926	1	0.05
17929	1	0.05
17933	1	0.05
17936	1	0.05
17942	2	0.10
17956	2	0.10
17960	1	0.05
17966	1	0.05
17972	2	0.10
17973	2	0.10
17974	1	0.05
17979	1	0.05
17983	1	0.05
17991	1	0.05
17996	1	0.05
18001	1	0.05
18008	1	0.05
18013	1	0.05
18014	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
18018	1	0.05
18022	3	0.16
18024	2	0.10
18034	1	0.05
18041	1	0.05
18042	2	0.10
18044	2	0.10
18045	2	0.10
18055	2	0.10
18057	1	0.05
18058	1	0.05
18064	1	0.05
18066	1	0.05
18072	2	0.10
18075	1	0.05
18086	1	0.05
18096	2	0.10
18097	1	0.05
18102	1	0.05
18109	1	0.05
18121	2	0.10
18127	2	0.10
18131	1	0.05
18132	1	0.05
18133	1	0.05
18141	1	0.05
18144	1	0.05
18145	1	0.05
18148	1	0.05
18149	1	0.05
18162	2	0.10
18166	2	0.10
18174	1	0.05
18176	1	0.05
18177	1	0.05
18206	1	0.05
18207	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
18210	2	0.10
18212	2	0.10
18213	1	0.05
18216	1	0.05
18218	1	0.05
18221	1	0.05
18229	1	0.05
18230	1	0.05
18231	1	0.05
18238	2	0.10
18258	1	0.05
18259	1	0.05
18269	1	0.05
18272	2	0.10
18274	1	0.05
18279	1	0.05
18290	1	0.05
18293	2	0.10
18294	1	0.05
18295	1	0.05
18297	2	0.10
18305	1	0.05
18312	1	0.05
18313	2	0.10
18314	1	0.05
18318	1	0.05
18319	3	0.16
18321	2	0.10
18322	1	0.05
18323	2	0.10
18326	2	0.10
18329	1	0.05
18332	2	0.10
18335	2	0.10
18339	2	0.10
18340	3	0.16
18342	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
18346	1	0.05
18348	1	0.05
18351	1	0.05
18362	4	0.21
18368	1	0.05
18372	2	0.10
18375	2	0.10
18376	1	0.05
18377	3	0.16
18379	1	0.05
18380	3	0.16
18388	1	0.05
18394	1	0.05
18404	2	0.10
18406	2	0.10
18407	3	0.16
18408	1	0.05
18420	1	0.05
18422	1	0.05
18423	1	0.05
18424	1	0.05
18437	1	0.05
18438	2	0.10
18439	3	0.16
18441	1	0.05
18445	1	0.05
18447	1	0.05
18450	3	0.16
18452	1	0.05
18468	3	0.16
18472	1	0.05
18476	1	0.05
18479	3	0.16
18482	1	0.05
18491	2	0.10
18496	1	0.05
18500	3	0.16

The FREQ Procedure

Cust_Income	Frequency	Percent
18505	1	0.05
18506	1	0.05
18514	2	0.10
18515	1	0.05
18517	1	0.05
18519	1	0.05
18523	2	0.10
18532	2	0.10
18537	1	0.05
18539	2	0.10
18543	1	0.05
18546	1	0.05
18552	1	0.05
18553	1	0.05
18559	3	0.16
18564	1	0.05
18566	2	0.10
18570	2	0.10
18571	1	0.05
18576	1	0.05
18578	1	0.05
18579	2	0.10
18580	2	0.10
18587	3	0.16
18592	1	0.05
18593	1	0.05
18596	2	0.10
18597	1	0.05
18600	1	0.05
18610	1	0.05
18613	2	0.10
18619	1	0.05
18622	1	0.05
18625	1	0.05
18632	2	0.10
18642	1	0.05
18645	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
18646	1	0.05
18647	2	0.10
18655	1	0.05
18657	1	0.05
18659	1	0.05
18660	2	0.10
18661	2	0.10
18662	1	0.05
18669	2	0.10
18673	2	0.10
18679	1	0.05
18681	2	0.10
18683	1	0.05
18688	1	0.05
18691	3	0.16
18693	1	0.05
18695	1	0.05
18696	2	0.10
18697	1	0.05
18702	1	0.05
18703	2	0.10
18705	2	0.10
18706	1	0.05
18708	1	0.05
18716	1	0.05
18718	2	0.10
18720	1	0.05
18725	1	0.05
18728	1	0.05
18730	1	0.05
18737	1	0.05
18741	2	0.10
18743	2	0.10
18755	1	0.05
18756	1	0.05
18759	1	0.05
18760	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
18761	2	0.10
18766	1	0.05
18774	1	0.05
18780	1	0.05
18781	1	0.05
18782	1	0.05
18789	1	0.05
18793	1	0.05
18795	1	0.05
18799	1	0.05
18800	1	0.05
18809	1	0.05
18810	2	0.10
18811	1	0.05
18812	1	0.05
18818	1	0.05
18819	1	0.05
18827	1	0.05
18835	1	0.05
18838	2	0.10
18844	1	0.05
18858	1	0.05
18859	2	0.10
18862	1	0.05
18867	2	0.10
18875	2	0.10
18886	2	0.10
18897	1	0.05
18904	4	0.21
18909	2	0.10
18911	3	0.16
18920	1	0.05
18926	1	0.05
18929	2	0.10
18931	1	0.05
18933	1	0.05
18936	3	0.16

The FREQ Procedure

Cust_Income	Frequency	Percent
18942	3	0.16
18944	1	0.05
18950	1	0.05
18955	1	0.05
18956	3	0.16
18968	1	0.05
18972	1	0.05
18973	2	0.10
18974	1	0.05
18975	1	0.05
18978	1	0.05
18989	1	0.05
18996	2	0.10
19001	2	0.10
19011	1	0.05
19014	1	0.05
19022	1	0.05
19033	2	0.10
19035	1	0.05
19037	1	0.05
19041	1	0.05
19051	2	0.10
19057	1	0.05
19058	1	0.05
19066	1	0.05
19068	1	0.05
19081	2	0.10
19087	1	0.05
19089	2	0.10
19105	1	0.05
19107	2	0.10
19108	2	0.10
19117	1	0.05
19131	1	0.05
19143	1	0.05
19148	1	0.05
19152	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
19157	1	0.05
19162	1	0.05
19194	1	0.05
19195	1	0.05
19196	1	0.05
19197	2	0.10
19198	1	0.05
19201	1	0.05
19202	1	0.05
19210	1	0.05
19213	1	0.05
19221	1	0.05
19229	2	0.10
19233	2	0.10
19240	2	0.10
19249	2	0.10
19257	1	0.05
19260	1	0.05
19272	2	0.10
19280	2	0.10
19284	2	0.10
19285	1	0.05
19294	2	0.10
19295	1	0.05
19298	1	0.05
19302	2	0.10
19306	2	0.10
19310	1	0.05
19319	1	0.05
19320	1	0.05
19325	1	0.05
19332	1	0.05
19335	2	0.10
19342	1	0.05
19346	1	0.05
19375	1	0.05
19376	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
19377	1	0.05
19381	1	0.05
19382	1	0.05
19385	1	0.05
19388	1	0.05
19401	1	0.05
19407	2	0.10
19424	1	0.05
19425	1	0.05
19440	2	0.10
19441	1	0.05
19448	3	0.16
19450	1	0.05
19452	2	0.10
19465	1	0.05
19468	1	0.05
19477	3	0.16
19479	1	0.05
19491	1	0.05
19500	1	0.05
19505	1	0.05
19506	1	0.05
19507	1	0.05
19517	1	0.05
19522	1	0.05
19523	2	0.10
19534	1	0.05
19538	1	0.05
19539	1	0.05
19541	1	0.05
19553	1	0.05
19559	1	0.05
19568	2	0.10
19579	1	0.05
19580	1	0.05
19581	2	0.10
19591	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
19597	1	0.05
19599	2	0.10
19600	1	0.05
19615	1	0.05
19617	1	0.05
19621	2	0.10
19627	1	0.05
19629	1	0.05
19639	2	0.10
19647	2	0.10
19648	1	0.05
19649	1	0.05
19660	1	0.05
19678	1	0.05
19681	1	0.05
19682	2	0.10
19684	1	0.05
19688	1	0.05
19691	1	0.05
19695	2	0.10
19697	1	0.05
19702	1	0.05
19722	1	0.05
19723	1	0.05
19728	2	0.10
19736	1	0.05
19739	1	0.05
19741	1	0.05
19743	1	0.05
19748	2	0.10
19755	1	0.05
19760	2	0.10
19761	1	0.05
19765	1	0.05
19766	1	0.05
19777	1	0.05
19780	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
19788	1	0.05
19810	1	0.05
19815	2	0.10
19816	2	0.10
19833	1	0.05
19841	2	0.10
19855	1	0.05
19867	1	0.05
19869	1	0.05
19876	1	0.05
19878	1	0.05
19886	1	0.05
19894	1	0.05
19898	2	0.10
19904	1	0.05
19907	3	0.16
19919	1	0.05
19930	1	0.05
19931	2	0.10
19936	1	0.05
19941	2	0.10
19944	2	0.10
19955	1	0.05
19960	2	0.10
19963	1	0.05
19968	3	0.16
19975	1	0.05
19983	1	0.05
19986	1	0.05
19989	2	0.10
19998	1	0.05
20000	1	0.05
20001	2	0.10
20003	1	0.05
20010	1	0.05
20011	2	0.10
20014	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
20021	1	0.05
20025	1	0.05
20028	1	0.05
20035	2	0.10
20037	1	0.05
20042	1	0.05
20055	1	0.05
20063	1	0.05
20069	2	0.10
20071	1	0.05
20079	1	0.05
20081	1	0.05
20084	2	0.10
20087	1	0.05
20089	2	0.10
20094	1	0.05
20103	1	0.05
20105	1	0.05
20107	1	0.05
20126	1	0.05
20127	1	0.05
20130	2	0.10
20148	1	0.05
20151	1	0.05
20154	1	0.05
20162	1	0.05
20163	1	0.05
20189	1	0.05
20193	1	0.05
20197	3	0.16
20198	2	0.10
20200	1	0.05
20204	1	0.05
20206	1	0.05
20207	2	0.10
20209	1	0.05
20220	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
20221	1	0.05
20227	2	0.10
20230	1	0.05
20233	1	0.05
20237	2	0.10
20238	1	0.05
20240	1	0.05
20244	1	0.05
20249	1	0.05
20257	1	0.05
20258	1	0.05
20262	1	0.05
20284	1	0.05
20285	1	0.05
20294	2	0.10
20298	2	0.10
20301	1	0.05
20302	1	0.05
20304	1	0.05
20306	1	0.05
20319	1	0.05
20320	1	0.05
20321	1	0.05
20323	2	0.10
20324	1	0.05
20325	1	0.05
20326	1	0.05
20327	2	0.10
20329	1	0.05
20335	1	0.05
20337	1	0.05
20342	1	0.05
20343	2	0.10
20346	1	0.05
20363	1	0.05
20364	1	0.05
20373	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
20377	1	0.05
20380	1	0.05
20385	2	0.10
20390	1	0.05
20393	1	0.05
20396	2	0.10
20401	1	0.05
20405	3	0.16
20410	2	0.10
20420	1	0.05
20429	1	0.05
20434	1	0.05
20440	3	0.16
20441	1	0.05
20444	1	0.05
20447	1	0.05
20449	2	0.10
20454	1	0.05
20467	1	0.05
20470	1	0.05
20476	1	0.05
20477	1	0.05
20482	1	0.05
20484	3	0.16
20485	2	0.10
20486	1	0.05
20487	1	0.05
20488	1	0.05
20490	1	0.05
20502	2	0.10
20507	2	0.10
20522	1	0.05
20523	1	0.05
20534	1	0.05
20537	2	0.10
20538	1	0.05
20539	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
20558	1	0.05
20559	1	0.05
20561	1	0.05
20562	1	0.05
20568	1	0.05
20581	2	0.10
20582	1	0.05
20591	1	0.05
20605	2	0.10
20639	2	0.10
20647	2	0.10
20649	1	0.05
20675	1	0.05
20677	1	0.05
20680	1	0.05
20682	1	0.05
20689	1	0.05
20695	1	0.05
20714	2	0.10
20721	2	0.10
20723	1	0.05
20724	1	0.05
20728	1	0.05
20735	1	0.05
20741	1	0.05
20743	1	0.05
20744	1	0.05
20745	1	0.05
20765	2	0.10
20768	3	0.16
20769	2	0.10
20772	1	0.05
20775	2	0.10
20779	2	0.10
20787	1	0.05
20789	1	0.05
20805	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
20809	2	0.10
20813	1	0.05
20828	2	0.10
20850	1	0.05
20851	1	0.05
20855	3	0.16
20869	1	0.05
20877	1	0.05
20878	2	0.10
20883	1	0.05
20898	1	0.05
20900	2	0.10
20908	1	0.05
20914	1	0.05
20936	1	0.05
20941	1	0.05
20950	1	0.05
20960	1	0.05
20963	1	0.05
20968	1	0.05
20974	1	0.05
20978	2	0.10
20980	2	0.10
20998	1	0.05
20999	2	0.10
21003	1	0.05
21010	1	0.05
21029	1	0.05
21032	1	0.05
21055	1	0.05
21056	1	0.05
21062	2	0.10
21067	1	0.05
21070	1	0.05
21074	1	0.05
21077	1	0.05
21079	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
21087	1	0.05
21093	1	0.05
21094	2	0.10
21098	2	0.10
21118	1	0.05
21120	2	0.10
21121	1	0.05
21126	1	0.05
21130	1	0.05
21132	1	0.05
21134	1	0.05
21142	4	0.21
21146	2	0.10
21147	1	0.05
21154	1	0.05
21155	1	0.05
21160	1	0.05
21162	1	0.05
21163	1	0.05
21171	1	0.05
21172	1	0.05
21175	1	0.05
21204	2	0.10
21214	2	0.10
21220	2	0.10
21228	2	0.10
21230	1	0.05
21231	1	0.05
21238	2	0.10
21244	1	0.05
21253	1	0.05
21257	1	0.05
21258	1	0.05
21272	1	0.05
21274	1	0.05
21294	1	0.05
21295	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
21296	1	0.05
21301	2	0.10
21304	1	0.05
21306	1	0.05
21322	1	0.05
21324	1	0.05
21329	1	0.05
21332	2	0.10
21334	1	0.05
21343	3	0.16
21346	3	0.16
21347	2	0.10
21377	1	0.05
21380	1	0.05
21381	1	0.05
21388	2	0.10
21392	1	0.05
21397	1	0.05
21399	1	0.05
21406	1	0.05
21410	1	0.05
21415	1	0.05
21434	1	0.05
21439	2	0.10
21447	1	0.05
21454	1	0.05
21465	1	0.05
21468	1	0.05
21472	2	0.10
21474	1	0.05
21484	2	0.10
21485	2	0.10
21486	1	0.05
21487	1	0.05
21488	1	0.05
21500	1	0.05
21502	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
21505	1	0.05
21516	1	0.05
21524	1	0.05
21545	2	0.10
21549	1	0.05
21562	1	0.05
21567	1	0.05
21582	1	0.05
21586	1	0.05
21632	1	0.05
21646	1	0.05
21653	1	0.05
21666	1	0.05
21673	1	0.05
21674	1	0.05
21679	2	0.10
21689	1	0.05
21696	2	0.10
21715	2	0.10
21728	2	0.10
21731	1	0.05
21735	2	0.10
21736	1	0.05
21743	2	0.10
21744	2	0.10
21745	1	0.05
21762	1	0.05
21765	1	0.05
21768	1	0.05
21769	1	0.05
21770	2	0.10
21772	1	0.05
21781	1	0.05
21782	1	0.05
21804	2	0.10
21810	1	0.05
21811	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
21812	1	0.05
21813	1	0.05
21825	2	0.10
21833	1	0.05
21854	1	0.05
21861	1	0.05
21870	1	0.05
21883	2	0.10
21893	1	0.05
21902	2	0.10
21906	1	0.05
21914	1	0.05
21929	1	0.05
21931	1	0.05
21932	2	0.10
21933	2	0.10
21940	1	0.05
21949	1	0.05
21957	1	0.05
21974	1	0.05
21980	1	0.05
21985	1	0.05
22005	1	0.05
22077	2	0.10
22083	2	0.10
22091	1	0.05
22094	2	0.10
22119	1	0.05
22120	1	0.05
22132	1	0.05
22134	1	0.05
22140	1	0.05
22142	1	0.05
22143	1	0.05
22146	1	0.05
22162	1	0.05
22179	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
22180	1	0.05
22201	1	0.05
22209	1	0.05
22220	1	0.05
22232	1	0.05
22260	1	0.05
22261	1	0.05
22272	1	0.05
22294	2	0.10
22295	1	0.05
22323	1	0.05
22336	1	0.05
22347	3	0.16
22351	1	0.05
22377	1	0.05
22388	1	0.05
22392	2	0.10
22403	1	0.05
22412	2	0.10
22428	1	0.05
22430	1	0.05
22434	1	0.05
22441	1	0.05
22446	1	0.05
22465	2	0.10
22474	2	0.10
22484	1	0.05
22491	2	0.10
22502	1	0.05
22510	1	0.05
22538	2	0.10
22545	1	0.05
22549	1	0.05
22553	1	0.05
22578	1	0.05
22623	1	0.05
22625	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
22632	1	0.05
22637	1	0.05
22642	2	0.10
22644	2	0.10
22651	1	0.05
22653	1	0.05
22654	1	0.05
22673	2	0.10
22674	2	0.10
22694	1	0.05
22696	1	0.05
22725	2	0.10
22735	1	0.05
22755	1	0.05
22756	1	0.05
22779	1	0.05
22796	1	0.05
22799	1	0.05
22804	1	0.05
22815	1	0.05
22833	1	0.05
22842	1	0.05
22847	1	0.05
22854	1	0.05
22861	3	0.16
22870	1	0.05
22879	1	0.05
22883	1	0.05
22893	1	0.05
22898	2	0.10
22918	1	0.05
22929	2	0.10
22931	1	0.05
22932	1	0.05
22945	1	0.05
22949	1	0.05
22962	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
22969	1	0.05
23005	2	0.10
23020	1	0.05
23082	1	0.05
23095	2	0.10
23103	1	0.05
23104	1	0.05
23120	1	0.05
23189	1	0.05
23237	1	0.05
23264	1	0.05
23268	2	0.10
23314	2	0.10
23321	1	0.05
23346	1	0.05
23351	2	0.10
23376	1	0.05
23379	1	0.05
23380	1	0.05
23381	1	0.05
23403	2	0.10
23406	1	0.05
23412	2	0.10
23428	1	0.05
23446	2	0.10
23474	1	0.05
23484	1	0.05
23491	1	0.05
23500	1	0.05
23510	1	0.05
23547	1	0.05
23578	2	0.10
23587	2	0.10
23606	1	0.05
23620	1	0.05
23621	1	0.05
23625	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
23628	1	0.05
23633	1	0.05
23642	1	0.05
23654	1	0.05
23655	1	0.05
23722	1	0.05
23725	1	0.05
23756	1	0.05
23779	1	0.05
23793	1	0.05
23823	2	0.10
23837	2	0.10
23858	1	0.05
23861	1	0.05
23879	1	0.05
23880	1	0.05
23898	1	0.05
23926	2	0.10
23938	1	0.05
23943	1	0.05
23945	1	0.05
23991	1	0.05
23998	2	0.10
24008	1	0.05
24020	1	0.05
24069	1	0.05
24071	1	0.05
24094	1	0.05
24095	1	0.05
24103	1	0.05
24161	1	0.05
24208	1	0.05
24224	1	0.05
24237	1	0.05
24241	1	0.05
24250	2	0.10
24268	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
24321	1	0.05
24355	1	0.05
24362	1	0.05
24376	1	0.05
24380	3	0.16
24396	1	0.05
24434	1	0.05
24439	2	0.10
24446	1	0.05
24463	1	0.05
24474	1	0.05
24500	1	0.05
24525	1	0.05
24526	2	0.10
24602	2	0.10
24610	1	0.05
24620	1	0.05
24621	2	0.10
24628	1	0.05
24637	1	0.05
24639	1	0.05
24679	1	0.05
24705	1	0.05
24713	1	0.05
24714	2	0.10
24726	1	0.05
24738	1	0.05
24740	1	0.05
24824	2	0.10
24834	1	0.05
24837	1	0.05
24847	2	0.10
24853	2	0.10
24858	1	0.05
24950	2	0.10
24957	1	0.05
24980	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
24991	1	0.05
24998	2	0.10
25008	1	0.05
25048	1	0.05
25094	1	0.05
25096	2	0.10
25124	1	0.05
25169	1	0.05
25221	1	0.05
25231	1	0.05
25239	2	0.10
25241	1	0.05
25274	1	0.05
25278	1	0.05
25306	2	0.10
25322	1	0.05
25325	1	0.05
25333	1	0.05
25355	1	0.05
25380	1	0.05
25388	1	0.05
25396	1	0.05
25400	2	0.10
25422	1	0.05
25447	1	0.05
25453	1	0.05
25466	1	0.05
25482	1	0.05
25502	1	0.05
25512	1	0.05
25526	1	0.05
25547	1	0.05
25552	1	0.05
25582	1	0.05
25619	1	0.05
25637	1	0.05
25667	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
25673	2	0.10
25679	1	0.05
25713	1	0.05
25715	1	0.05
25724	1	0.05
25725	1	0.05
25738	1	0.05
25748	1	0.05
25761	2	0.10
25798	1	0.05
25820	1	0.05
25824	1	0.05
25845	1	0.05
25851	1	0.05
25854	2	0.10
25855	2	0.10
25883	1	0.05
25903	2	0.10
25924	2	0.10
25932	1	0.05
25934	2	0.10
25980	3	0.16
25981	2	0.10
25985	2	0.10
26008	2	0.10
26048	1	0.05
26096	2	0.10
26103	1	0.05
26169	1	0.05
26209	2	0.10
26221	1	0.05
26231	1	0.05
26239	1	0.05
26245	2	0.10
26252	1	0.05
26274	1	0.05
26306	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
26312	1	0.05
26322	1	0.05
26377	1	0.05
26416	1	0.05
26422	1	0.05
26447	1	0.05
26453	1	0.05
26466	2	0.10
26475	1	0.05
26496	1	0.05
26510	1	0.05
26527	1	0.05
26596	1	0.05
26609	2	0.10
26631	1	0.05
26648	1	0.05
26691	1	0.05
26725	1	0.05
26739	1	0.05
26798	2	0.10
26845	1	0.05
26849	1	0.05
26851	1	0.05
26854	1	0.05
26855	1	0.05
26878	1	0.05
26904	2	0.10
26916	1	0.05
26920	2	0.10
26932	1	0.05
26938	1	0.05
26957	1	0.05
26976	2	0.10
26999	1	0.05
27061	1	0.05
27159	1	0.05
27185	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
27245	1	0.05
27490	1	0.05
27504	1	0.05
27510	1	0.05
27631	1	0.05
27691	1	0.05
27713	1	0.05
27808	1	0.05
27849	2	0.10
27904	2	0.10
27935	1	0.05
27957	1	0.05
27965	1	0.05
27996	1	0.05
28031	1	0.05
28120	1	0.05
28142	1	0.05
28185	1	0.05
28194	1	0.05
28225	1	0.05
28237	2	0.10
28245	1	0.05
28320	2	0.10
28348	2	0.10
28458	1	0.05
28490	2	0.10
28499	1	0.05
28503	1	0.05
28570	1	0.05
28582	1	0.05
28603	1	0.05
28675	1	0.05
28695	2	0.10
28726	1	0.05
28734	1	0.05
28742	2	0.10
28744	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
28808	1	0.05
28826	1	0.05
28936	1	0.05
28964	1	0.05
28965	1	0.05
28966	1	0.05
29116	1	0.05
29120	1	0.05
29142	1	0.05
29245	1	0.05
29320	1	0.05
29336	1	0.05
29341	1	0.05
29496	1	0.05
29499	1	0.05
29503	1	0.05
29525	2	0.10
29549	1	0.05
29570	2	0.10
29577	2	0.10
29582	2	0.10
29603	2	0.10
29610	1	0.05
29664	1	0.05
29726	1	0.05
29732	1	0.05
29744	1	0.05
29757	1	0.05
29814	1	0.05
29826	1	0.05
29964	2	0.10
30026	1	0.05
30118	1	0.05
30275	1	0.05
30336	1	0.05
30427	1	0.05
30732	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
30787	1	0.05
30814	1	0.05
30852	1	0.05
30972	1	0.05
30992	2	0.10
31064	1	0.05
31124	1	0.05
31328	1	0.05
31379	1	0.05
31402	1	0.05
31437	1	0.05
31595	2	0.10
31606	1	0.05
31627	2	0.10
31659	2	0.10
31752	1	0.05
31756	2	0.10
31787	1	0.05
31799	1	0.05
31823	1	0.05
31835	2	0.10
31992	1	0.05
32007	1	0.05
32046	2	0.10
32048	1	0.05
32064	1	0.05
32068	2	0.10
32099	2	0.10
32123	1	0.05
32124	1	0.05
32159	2	0.10
32174	1	0.05
32291	1	0.05
32307	1	0.05
32328	1	0.05
32413	2	0.10
32422	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
32444	1	0.05
32465	1	0.05
32567	1	0.05
32595	2	0.10
32606	1	0.05
32627	2	0.10
32650	1	0.05
32659	1	0.05
32665	1	0.05
32704	1	0.05
32752	1	0.05
32756	1	0.05
32779	1	0.05
32792	1	0.05
32835	1	0.05
32856	2	0.10
32872	1	0.05
32924	1	0.05
32959	1	0.05
33007	1	0.05
33048	1	0.05
33061	1	0.05
33068	1	0.05
33099	1	0.05
33123	1	0.05
33159	2	0.10
33172	1	0.05
33213	1	0.05
33265	1	0.05
33328	1	0.05
33567	1	0.05
33603	1	0.05
33606	1	0.05
33639	1	0.05
33650	1	0.05
33665	2	0.10
33711	1	0.05

The FREQ Procedure

Cust_Income	Frequency	Percent
33824	2	0.10
33844	1	0.05
33861	1	0.05
33875	1	0.05
33880	1	0.05
33924	1	0.05
33947	1	0.05
34038	1	0.05
34049	1	0.05
34061	1	0.05
34068	1	0.05
34094	1	0.05
34141	1	0.05
34144	1	0.05
34161	1	0.05
34197	1	0.05
34200	1	0.05
34202	1	0.05
34265	1	0.05
34300	1	0.05
34303	2	0.10
34328	2	0.10
34331	1	0.05
34392	1	0.05
34419	1	0.05
34431	1	0.05
34436	1	0.05
34513	2	0.10
34545	1	0.05
34586	1	0.05
34613	2	0.10
34626	2	0.10
34627	1	0.05
34658	2	0.10
34665	1	0.05
34711	2	0.10
34740	2	0.10

The FREQ Procedure

Cust_Income	Frequency	Percent
34845	1	0.05
34847	2	0.10
34859	1	0.05
34880	1	0.05
34943	1	0.05
34947	1	0.05
34973	2	0.10
35049	1	0.05
35094	1	0.05
35144	2	0.10
35189	2	0.10
35190	1	0.05
35202	1	0.05
35328	1	0.05
35331	20	1.04

Agent_Tenure	Frequency	Percent
0	130	6.76
1	461	23.96
2	445	23.13
3	209	10.86
4	190	9.88
5	131	6.81
6	98	5.09
7	95	4.94
8	76	3.95
9	58	3.01
10	31	1.61

Complaint	Frequency	Percent
0	1368	71.10
1	556	28.90

The FREQ Procedure

YTD_contact_cnt	Frequency	Percent
16	135	7.02
17	267	13.88
18	243	12.63
19	291	15.12
20	206	10.71
21	124	6.44
22	123	6.39
23	111	5.77
24	99	5.15
25	77	4.00
26	52	2.70
27	67	3.48
28	63	3.27
29	32	1.66
30	34	1.77

The FREQ Procedure

Due_date_day_cnt	Frequency	Percent
0	5	0.26
1	53	2.75
2	87	4.52
3	52	2.70
4	64	3.33
5	94	4.89
6	134	6.96
7	128	6.65
8	129	6.70
9	128	6.65
10	199	10.34
11	181	9.41
12	48	2.49
13	40	2.08
14	52	2.70
15	49	2.55
16	54	2.81
17	48	2.49
18	46	2.39
19	21	1.09
20	29	1.51
21	39	2.03
22	33	1.72
23	30	1.56
24	36	1.87
25	15	0.78
26	20	1.04
27	12	0.62
28	19	0.99
29	11	0.57
30	15	0.78
31	12	0.62
32	11	0.57
33	8	0.42
34	22	1.14

The FREQ Procedure

Existing_policy_count	Frequency	Percent
1	135	7.02
2	121	6.29
3	118	6.13
4	118	6.13
5	130	6.76
6	116	6.03
7	132	6.86
8	136	7.07
9	142	7.38
10	134	6.96
11	106	5.51
12	150	7.80
13	120	6.24
14	124	6.44
15	142	7.38

Miss_due_date_cnt	Frequency	Percent
0	549	28.53
1	540	28.07
2	555	28.85
3	37	1.92
4	29	1.51
5	40	2.08
6	43	2.23
7	22	1.14
8	42	2.18
9	31	1.61
10	36	1.87

CustID	Age	EducationField	Gender	Cust_Income
10002	44	Statistics	Male	20130

The CORR Procedure

11 Variables:	Churn Age Cust_Tenure Overall_cust_satisfation_score Cust_Income Agent_Tenure Complaint YTD_contact_cnt Due_date_day_cnt Existing_policy_count Miss_due_date_cnt

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Churn	1924	0.16476	0.37106	317.00000	0	1.00000
Age	1924	42.62422	10.01131	82009	21.00000	60.00000
Cust_Tenure	1924	12.64865	7.01534	24336	1.00000	25.00000
Overall_cust_satisfation_score	1924	3.39553	1.18053	6533	1.00000	5.00000
Cust_Income	1924	21960	4718	42251865	16009	35331
Agent_Tenure	1924	3.16320	2.50125	6086	0	10.00000
Complaint	1924	0.28898	0.45341	556.00000	0	1.00000
YTD_contact_cnt	1924	20.66476	3.62567	39759	16.00000	30.00000
Due_date_day_cnt	1924	11.62942	7.50222	22375	0	34.00000
Existing_policy_count	1924	8.09304	4.32749	15571	1.00000	15.00000
Miss_due_date_cnt	1924	1.80042	2.25118	3464	0	10.00000

The CORR Procedure

Pearson Correlation Coefficients, N = 1924 Prob > |r| under H0: Rho=0						
	Churn	**Age**	**Cust_Tenure**	**Overall_cust_satisfation_score**	**Cust_Income**	**Agent_Tenure**
Churn	1.00000	-0.53627 <.0001	-0.46878 <.0001	-0.31386 <.0001	-0.16753 <.0001	0.04049 0.0758
Age	-0.53627 <.0001	1.00000	0.26821 <.0001	0.18660 <.0001	0.06839 0.0027	-0.03420 0.1337
Cust_Tenure	-0.46878 <.0001	0.26821 <.0001	1.00000	0.17760 <.0001	0.07437 0.0011	-0.01564 0.4930
Overall_cust_satisfation_score	-0.31386 <.0001	0.18660 <.0001	0.17760 <.0001	1.00000	0.07033 0.0020	-0.03825 0.0935
Cust_Income	-0.16753 <.0001	0.06839 0.0027	0.07437 0.0011	0.07033 0.0020	1.00000	0.18947 <.0001
Agent_Tenure	0.04049 0.0758	-0.03420 0.1337	-0.01564 0.4930	-0.03825 0.0935	0.18947 <.0001	1.00000
Complaint	0.24540 <.0001	-0.13405 <.0001	-0.14136 <.0001	-0.06890 0.0025	0.02262 0.3214	0.00562 0.8054
YTD_contact_cnt	0.00242 0.9154	-0.00108 0.9622	0.02939 0.1976	-0.01590 0.4857	-0.00123 0.9570	0.02611 0.2524
Due_date_day_cnt	-0.16617 <.0001	0.09038 <.0001	0.08459 0.0002	0.03869 0.0897	0.76874 <.0001	0.25555 <.0001
Existing_policy_count	-0.01927 0.3983	0.01701 0.4558	0.01271 0.5775	0.00643 0.7779	0.02490 0.2750	-0.00866 0.7043
Miss_due_date_cnt	0.82005 <.0001	-0.44226 <.0001	-0.37719 <.0001	-0.26320 <.0001	-0.13646 <.0001	0.03396 0.1365

The CORR Procedure

Pearson Correlation Coefficients, N = 1924 Prob > |r| under H0: Rho=0					
	Complaint	**YTD_contact_cnt**	**Due_date_day_cnt**	**Existing_policy_count**	**Miss_due_date_cnt**
Churn	0.24540 <.0001	0.00242 0.9154	-0.16617 <.0001	-0.01927 0.3983	0.82005 <.0001
Age	-0.13405 <.0001	-0.00108 0.9622	0.09038 <.0001	0.01701 0.4558	-0.44226 <.0001
Cust_Tenure	-0.14136 <.0001	0.02939 0.1976	0.08459 0.0002	0.01271 0.5775	-0.37719 <.0001
Overall_cust_satisfation_score	-0.06890 0.0025	-0.01590 0.4857	0.03869 0.0897	0.00643 0.7779	-0.26320 <.0001
Cust_Income	0.02262 0.3214	-0.00123 0.9570	0.76874 <.0001	0.02490 0.2750	-0.13646 <.0001
Agent_Tenure	0.00562 0.8054	0.02611 0.2524	0.25555 <.0001	-0.00866 0.7043	0.03396 0.1365
Complaint	1.00000	-0.01379 0.5454	0.01835 0.4211	-0.00735 0.7474	0.20225 <.0001
YTD_contact_cnt	-0.01379 0.5454	1.00000	0.00956 0.6752	0.05094 0.0255	-0.01400 0.5394
Due_date_day_cnt	0.01835 0.4211	0.00956 0.6752	1.00000	0.03004 0.1878	-0.13515 <.0001
Existing_policy_count	-0.00735 0.7474	0.05094 0.0255	0.03004 0.1878	1.00000	0.00591 0.7956
Miss_due_date_cnt	0.20225 <.0001	-0.01400 0.5394	-0.13515 <.0001	0.00591 0.7956	1.00000

The FREQ Procedure

Churn	Frequency	Percent
0	1607	83.52
1	317	16.48

The SURVEYSELECT Procedure

Selection Method	Simple Random Sampling

Input Data Set	INSURANCE
Random Number Seed	1234
Sample Size	600
Selection Probability	0.31185
Sampling Weight	3.206667
Number of Replicates	1
Total Sample Size	600
Output Data Set	TEST

The CONTENTS Procedure

Data Set Name	WORK.TEST	**Observations**	600
Member Type	DATA	**Variables**	21
Engine	V9	**Indexes**	0
Created	12/29/2020 18:54:22	**Observation Length**	192
Last Modified	12/29/2020 18:54:22	**Deleted Observations**	0
Protection		**Compressed**	NO
Data Set Type		**Sorted**	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
Data Set Page Size	131072
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	682
Obs in First Data Page	600
Number of Data Set Repairs	0
Filename	/saswork/SAS_work79830001F542_odaws02-apse1.oda.sas.com/SAS_work13B90001F542_odaws02-apse1.oda.sas.com/test.sas7bdat
Release Created	9.0401M6
Host Created	Linux
Inode Number	1074799150
Access Permission	rw-r--r--
Owner Name	u48688022
File Size	256KB
File Size (bytes)	262144

The CONTENTS Procedure

Variables in Creation Order						
#	**Variable**	**Type**	**Len**	**Format**	**Informat**	**Label**
1	Replicate	Num	8			Sample Replicate Number
2	CustID	Num	8	BEST12.	BEST32.	
3	Mobile_num	Num	8	BEST12.	BEST32.	
4	Churn	Num	8	BEST12.	BEST32.	
5	Age	Num	8	BEST12.	BEST32.	
6	Payment_Period	Char	9	$9.	$9.	
7	Product	Char	14	$14.	$14.	
8	Cust_Tenure	Num	8	BEST12.	BEST32.	
9	EducationField	Char	17	$17.	$17.	
10	Gender	Char	6	$6.	$6.	
11	Overall_cust_satisfation_score	Num	8	BEST12.	BEST32.	
12	Cust_Designation	Char	14	$14.	$14.	
13	CC_Satisfation_score	Num	8	BEST12.	BEST32.	
14	Cust_MaritalStatus	Char	8	$8.	$8.	
15	Cust_Income	Num	8	BEST12.	BEST32.	
16	Agent_Tenure	Num	8	BEST12.	BEST32.	
17	Complaint	Num	8	BEST12.	BEST32.	
18	YTD_contact_cnt	Num	8	BEST12.	BEST32.	
19	Due_date_day_cnt	Num	8	BEST12.	BEST32.	
20	Existing_policy_count	Num	8	BEST12.	BEST32.	
21	Miss_due_date_cnt	Num	8	BEST12.	BEST32.	

The FREQ Procedure

Churn	Frequency	Percent
0	511	85.17
1	89	14.83

The FREQ Procedure

Churn	Frequency	Percent
0	1096	82.78
1	228	17.22

The REG Procedure
Model: MODEL1
Dependent Variable: Churn

Number of Observations Read	1924
Number of Observations Used	1924

Analysis of Variance

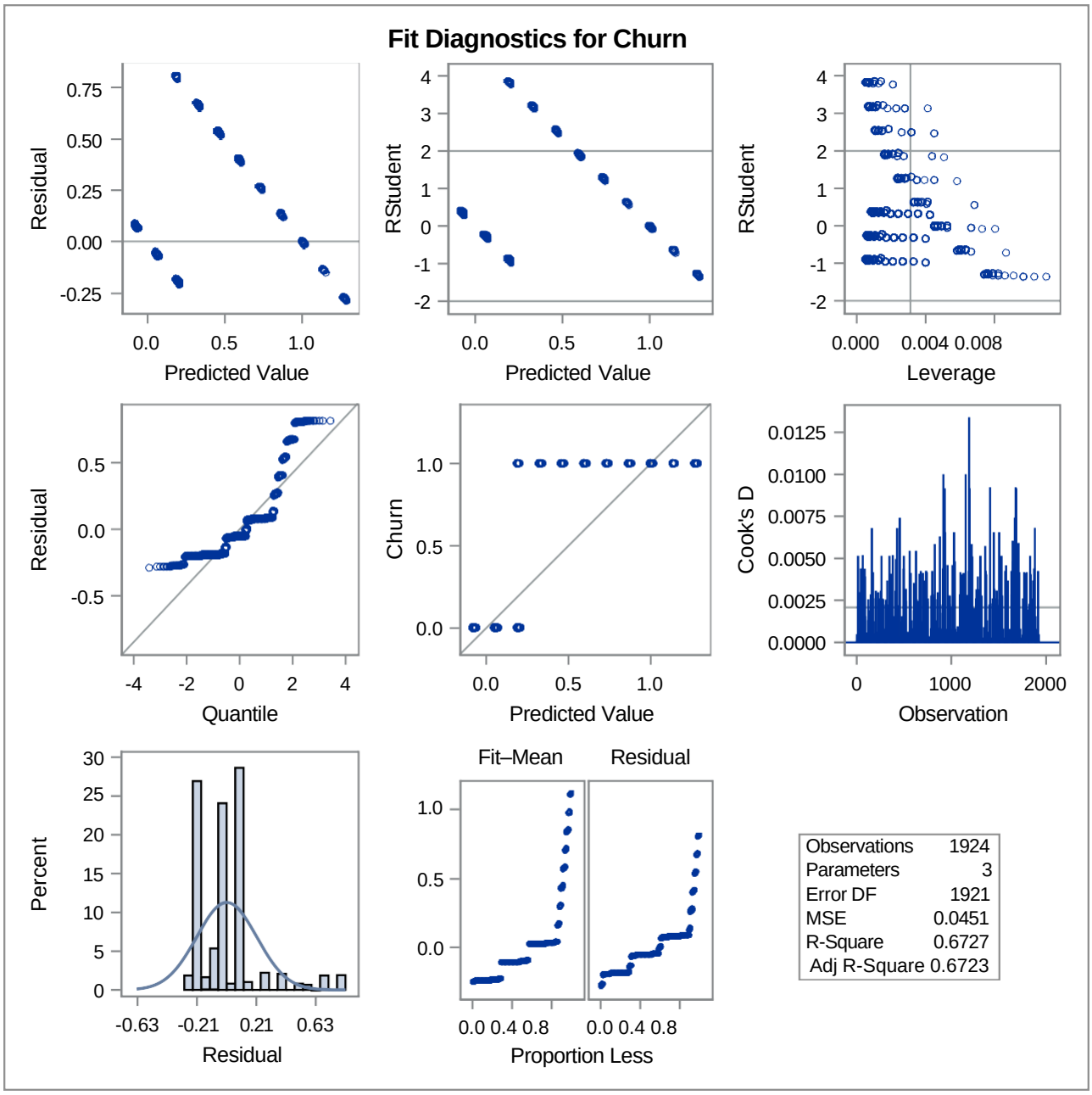
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	178.10471	89.05235	1973.89	<.0001
Error	1921	86.66608	0.04512		
Corrected Total	1923	264.77079			

Root MSE	0.21240	**R-Square**	0.6727
Dependent Mean	0.16476	**Adj R-Sq**	0.6723
Coeff Var	128.91597		

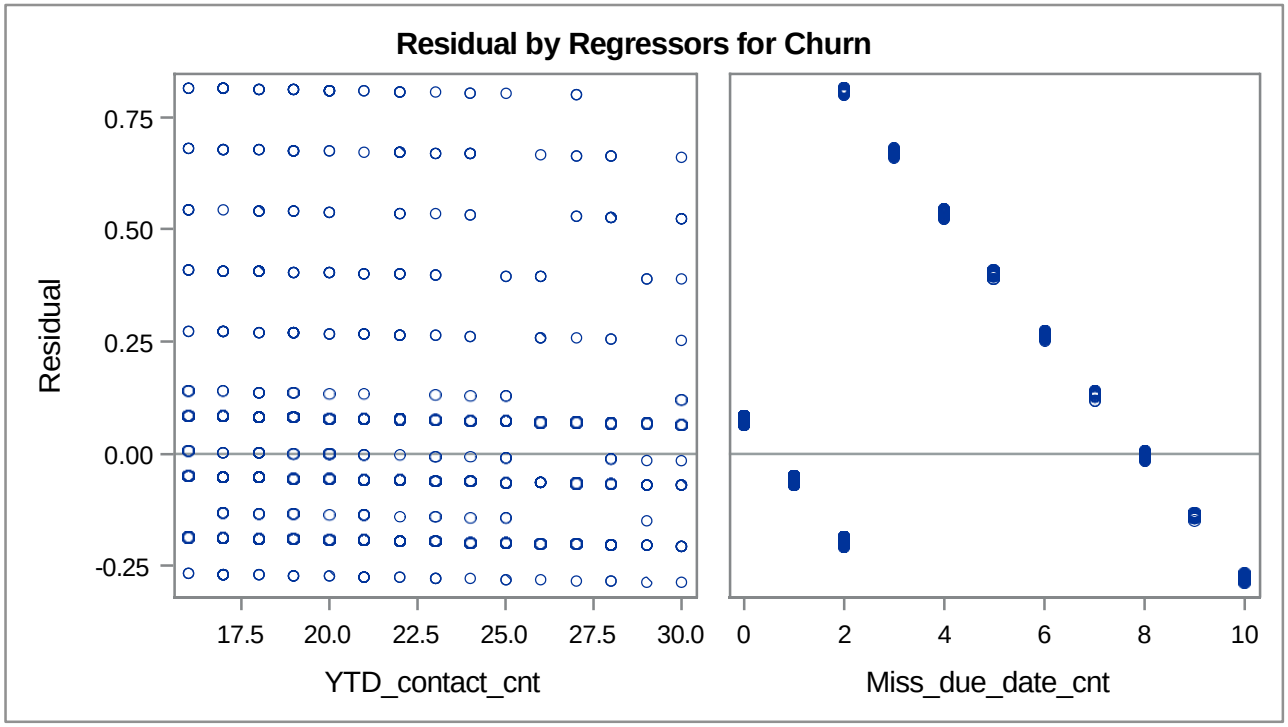
Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.10807	0.02835	-3.81	0.0001
YTD_contact_cnt	1	0.00142	0.00134	1.07	0.2869
Miss_due_date_cnt	1	0.13520	0.00215	62.83	<.0001

The REG Procedure
Model: MODEL1
Dependent Variable: Churn



The REG Procedure
Model: MODEL1
Dependent Variable: Churn



The LOGISTIC Procedure

Model Information	
Data Set	WORK.TRAIN
Response Variable	Churn
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	1324
Number of Observations Used	1324

Response Profile		
Ordered Value	**Churn**	**Total Frequency**
1	0	1096
2	1	228

Probability modeled is Churn='0'.

Model Convergence Status
Quasi-complete separation of data points detected.

Warning: The maximum likelihood estimate may not exist.

Warning: The LOGISTIC procedure continues in spite of the above warning. Results shown are based on the last maximum likelihood iteration. Validity of the model fit is questionable.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	1218.401	87.148
SC	1223.590	144.221
-2 Log L	1216.401	65.148

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	1151.2533	10	<.0001
Score	982.0692	10	<.0001
Wald	29.7653	10	0.0009

The LOGISTIC Procedure

Warning: The validity of the model fit is questionable.

Analysis of Maximum Likelihood Estimates					
Parameter	**DF**	**Estimate**	**Standard Error**	**Wald Chi-Square**	**Pr > ChiSq**
Intercept	1	7.7476	88.8731	0.0076	0.9305
Age	1	0.2800	0.0694	16.2907	<.0001
Cust_Tenure	1	0.4762	0.1144	17.3115	<.0001
Overall_cust_satisfa	1	0.7882	0.3311	5.6658	0.0173
Cust_Income	1	0.000033	0.000114	0.0820	0.7746
Agent_Tenure	1	-0.0737	0.1527	0.2328	0.6295
Complaint	1	-1.7097	0.7332	5.4379	0.0197
YTD_contact_cnt	1	0.1342	0.1032	1.6936	0.1931
Due_date_day_cnt	1	0.0311	0.0798	0.1520	0.6966
Existing_policy_coun	1	0.1372	0.0823	2.7794	0.0955
Miss_due_date_cnt	1	-12.9975	44.4065	0.0857	0.7698

Odds Ratio Estimates			
Effect	**Point Estimate**	**95% Wald Confidence Limits**	
Age	1.323	1.155	1.516
Cust_Tenure	1.610	1.286	2.015
Overall_cust_satisfa	2.199	1.149	4.209
Cust_Income	1.000	1.000	1.000
Agent_Tenure	0.929	0.689	1.253
Complaint	0.181	0.043	0.761
YTD_contact_cnt	1.144	0.934	1.400
Due_date_day_cnt	1.032	0.882	1.206
Existing_policy_coun	1.147	0.976	1.348
Miss_due_date_cnt	<0.001	<0.001	>999.999

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	99.9	**Somers' D**	0.999
Percent Discordant	0.1	**Gamma**	0.999
Percent Tied	0.0	**Tau-a**	0.285
Pairs	249888	**c**	0.999