

Customer Distribution and Deactivation Analysis on CRM data set for Telecom

Presented by:
Anna Liza Dela Cruz

Background and Objective

- ▶ The wireless company aims to avoid any attrition coming from their customers and to gain insightful understanding on how to improve their marketing strategy that will help keep their customers.
- ▶ Be able to conduct analysis based on the distribution of each variable based on the data gathered to come up with the best possible recommendation that would be helpful to the company.

Data Sources & Analysis

- Description of Data
- Distribution of Each Variables
- Segmentation
- Statistical Analysis
- Conclusion and Recommendation

Wireless Data Set

There are 102,255 observations with 10 variables on this data set, with no duplicate values and some missing values on some variables.

Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	Format
1	AcctNo	Char	13	
2	Actdt	Num	8	MMDDYY10.
8	Age	Num	8	
4	DeactReason	Char	4	
3	Deactdt	Num	8	MMDDYY10.
7	DealerType	Char	2	
5	GoodCredit	Char	1	
9	Province	Char	2	
6	RatePlan	Char	1	
10	Sales	Num	8	DOLLAR8.2

The SAS System

Obs	AcctNo	Actdt	Deactdt	DeactReason	GoodCredit	RatePlan	DealerType	Age	Province	Sales
1	1176913194483	06/20/1999	-		0	1	A1	58	BC	\$128.00
2	1176914599423	10/04/1999	10/15/1999	NEED	1	1	A1	45	AB	\$72.00
3	1176951913656	07/01/2000	-		0	1	A1	57	BC	\$593.00
4	1176954000288	05/30/2000	-		1	2	A1	47	ON	\$83.00
5	1176969186303	12/13/2000	-		1	1	C1	82	BC	-
6	1176991056273	08/31/1999	09/18/2000	MOVE	1	1	C1	92	QC	\$1041.00
7	1176991866552	05/24/2000	-		1	1	A1	77	ON	-
8	1176992889500	11/28/2000	-		1	1	C1	68	AB	\$72.00
9	1177000067271	12/23/1999	-		0	1	B1	75	ON	\$134.00
10	1177010940613	12/09/1999	-		1	2	A1	42	NS	\$11.00

1.1 Summarization - Categorical Variables

The FREQ Procedure

AcctNo	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1176913194483	1	0.00	1	0.00
1176914599423	1	0.00	2	0.00
1176951913656	1	0.00	3	0.00
1176954000288	1	0.00	4	0.00
1176969186303	1	0.00	5	0.00
1176991056273	1	0.00	6	0.01
1176991866552	1	0.00	7	0.01
1176992889500	1	0.00	8	0.01
1177000067271	1	0.00	9	0.01
1177010940613	1	0.00	10	0.01
1177025997013	1	0.00	11	0.01
1177027515760	1	0.00	12	0.01
1177028996676	1	0.00	13	0.01
1177038747105	1	0.00	14	0.01
1177045857516	1	0.00	15	0.01
1177057406016	1	0.00	16	0.02

DeactReason	Frequency	Percent	Cumulative Frequency	Cumulative Percent
	83162	81.33	83162	81.33
COMP	4722	4.62	87884	85.95
DEBT	4020	3.93	91904	89.88
MOVE	1696	1.66	93600	91.54
NEED	6888	6.74	100488	98.27
TECH	1767	1.73	102255	100.00

RatePlan	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	68194	66.69	68194	66.69
2	20187	19.74	88381	86.43
3	13874	13.57	102255	100.00

GoodCredit	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	31253	30.56	31253	30.56
1	71002	69.44	102255	100.00

Province	Frequency	Percent	Cumulative Frequency	Cumulative Percent
	5907	5.78	5907	5.78
AB	10277	10.05	16184	15.83
BC	22040	21.55	38224	37.38
NS	11529	11.27	49753	48.66
ON	42500	41.56	92253	90.22
QC	10002	9.78	102255	100.00

DealerType	Frequency	Percent	Cumulative Frequency	Cumulative Percent
A1	56132	54.89	56132	54.89
A2	11255	11.01	67387	65.90
B1	20670	20.21	88057	86.12
C1	14198	13.88	102255	100.00

Summarization - Numeric Variables

THIS IS UNIVARIATE ANALYSIS FOR Sales IN Anna.Wireless

The MEANS Procedure

Analysis Variable : Sales				
N	Mean	Std Dev	Minimum	Maximum
93650	181.2461612	233.9710402	0	1200.00

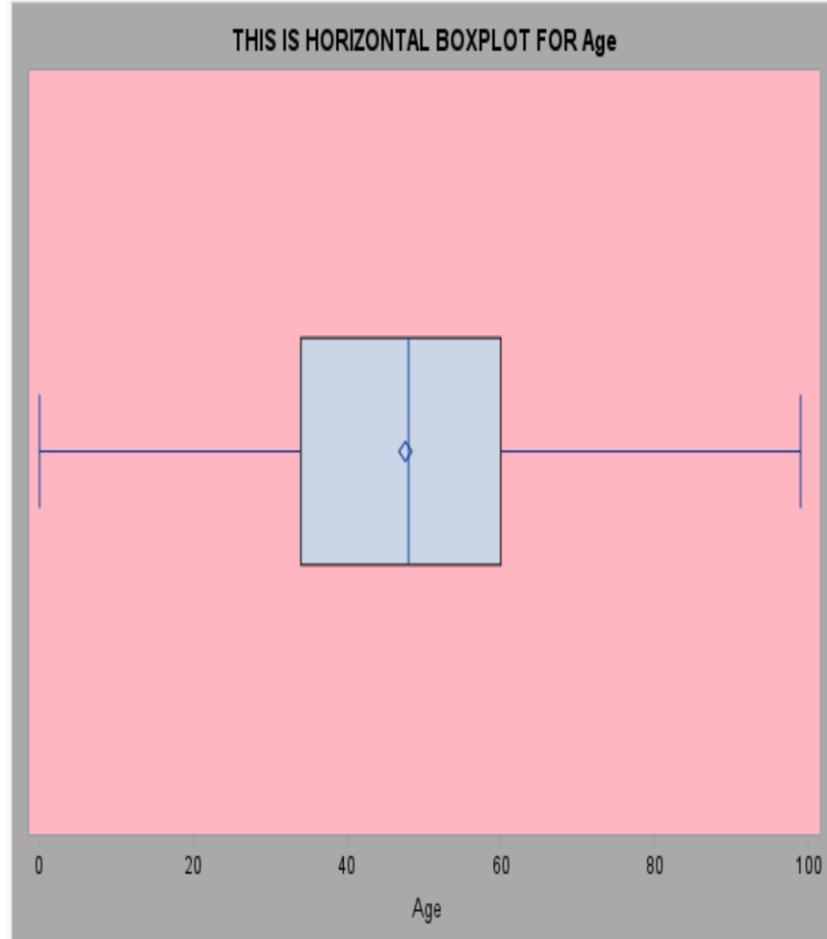
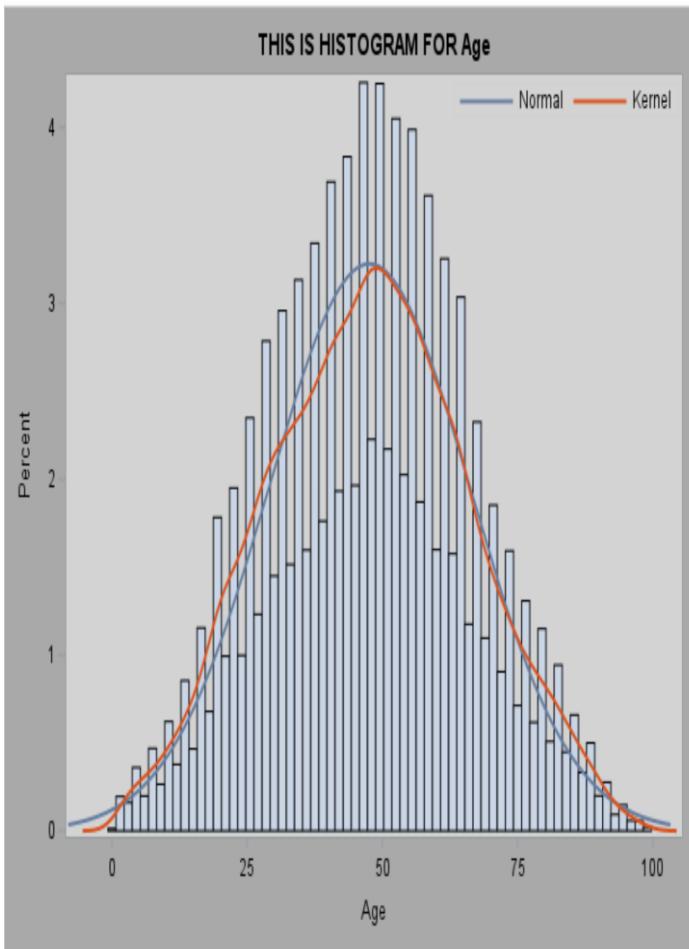
THIS IS UNIVARIATE ANALYSIS FOR Age IN Anna.Wireless

The MEANS Procedure

Analysis Variable : Age				
N	Mean	Std Dev	Minimum	Maximum
94547	47.5922240	18.5554517	0	99.0000000

Obs	Variable	N	NMiss	Min	Q1	Mean	Q3	Max
1	Actdt	102255	0	01/20/1999	10/05/1999	03/06/2000	09/02/2000	01/20/2001
2	Deactdt	19635	82620	01/25/1999	03/28/2000	07/10/2000	11/27/2000	01/20/2001

Visualization – Age

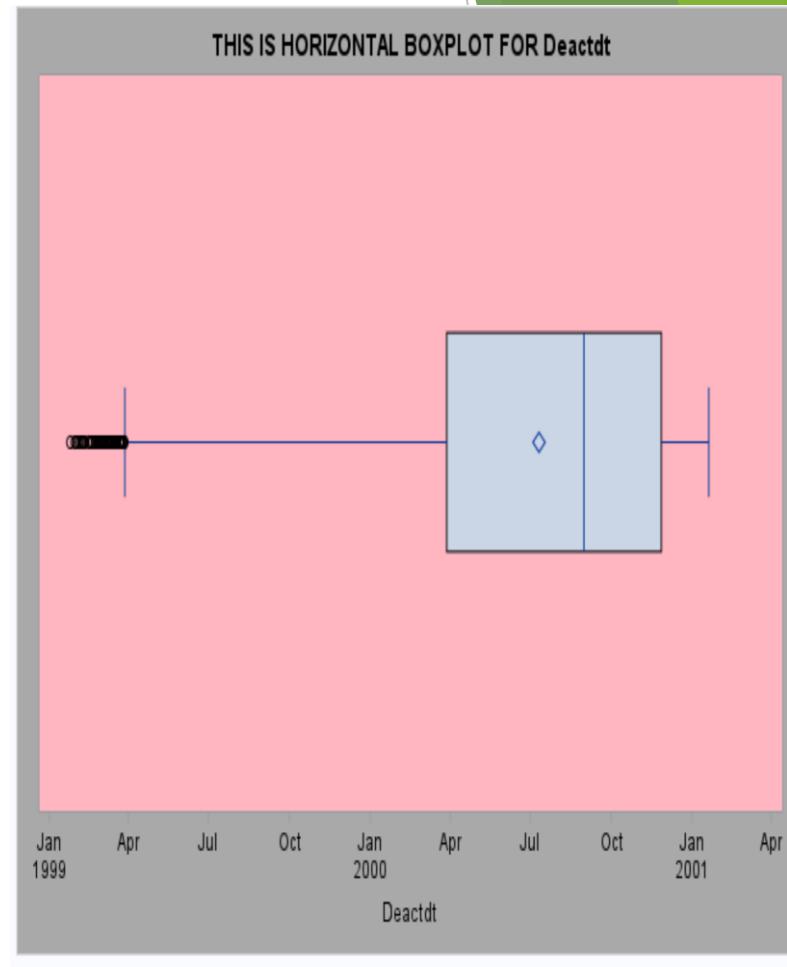
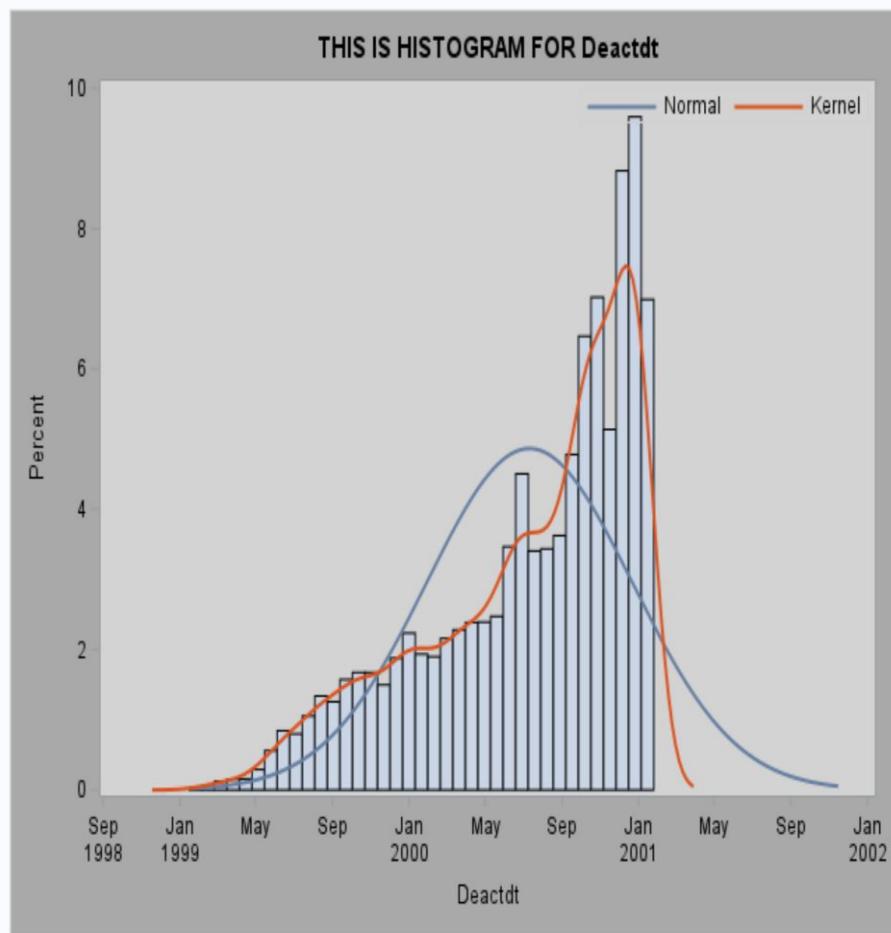


7/23/202

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Visualization for Deactdt

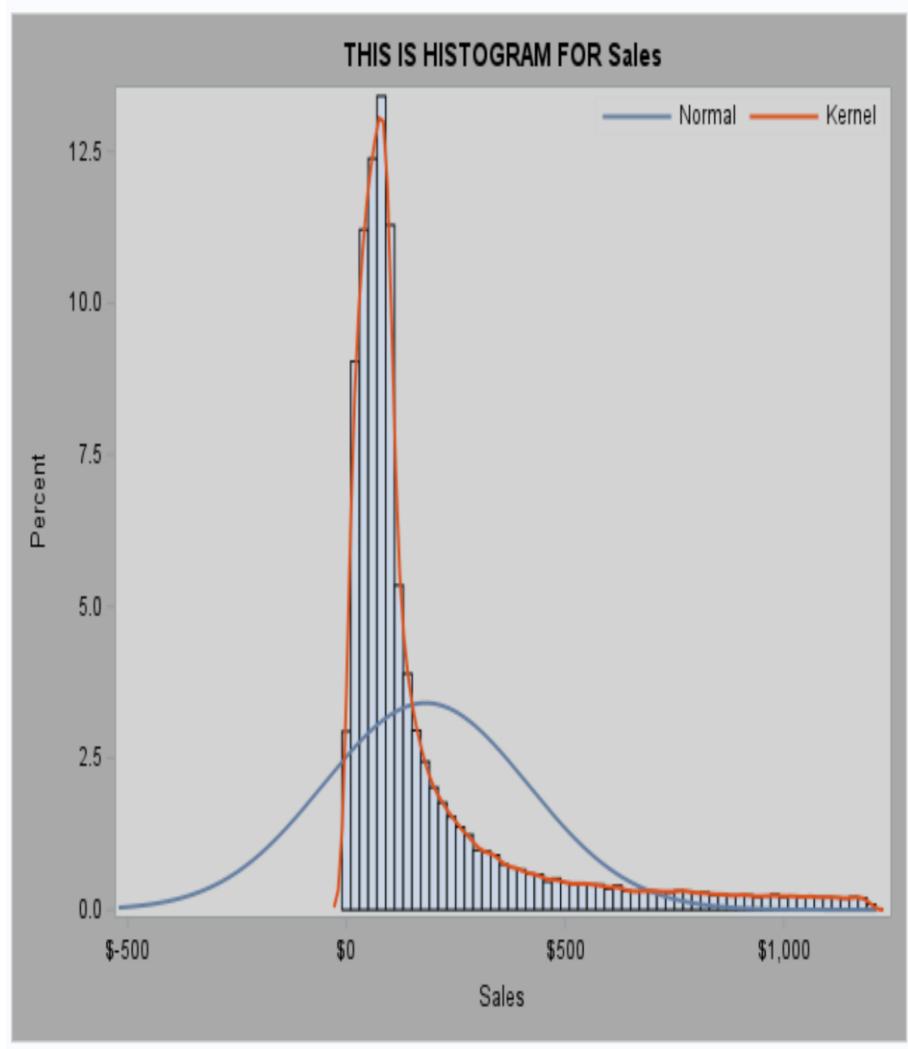
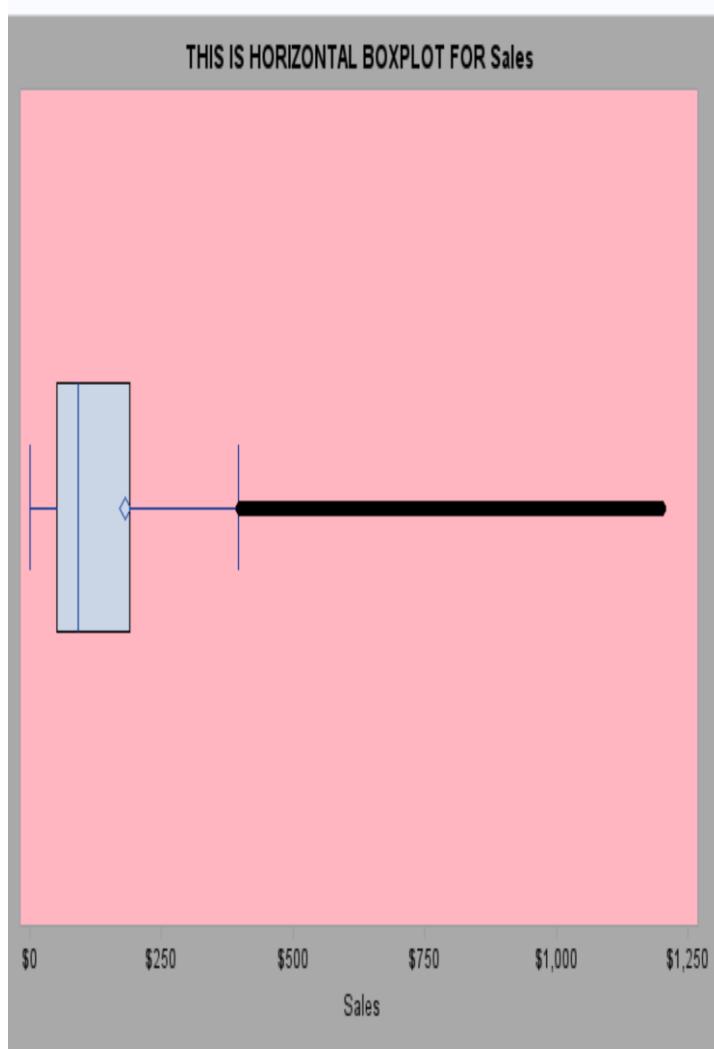


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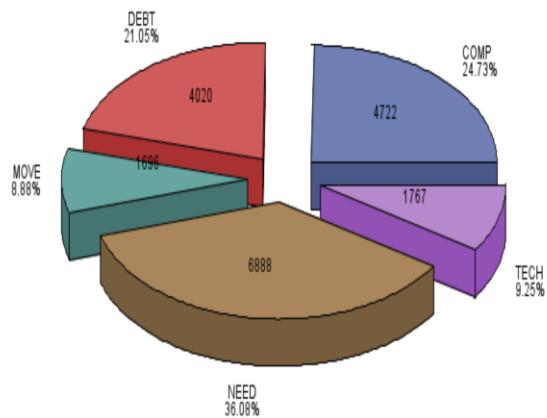
Visualization for Sales



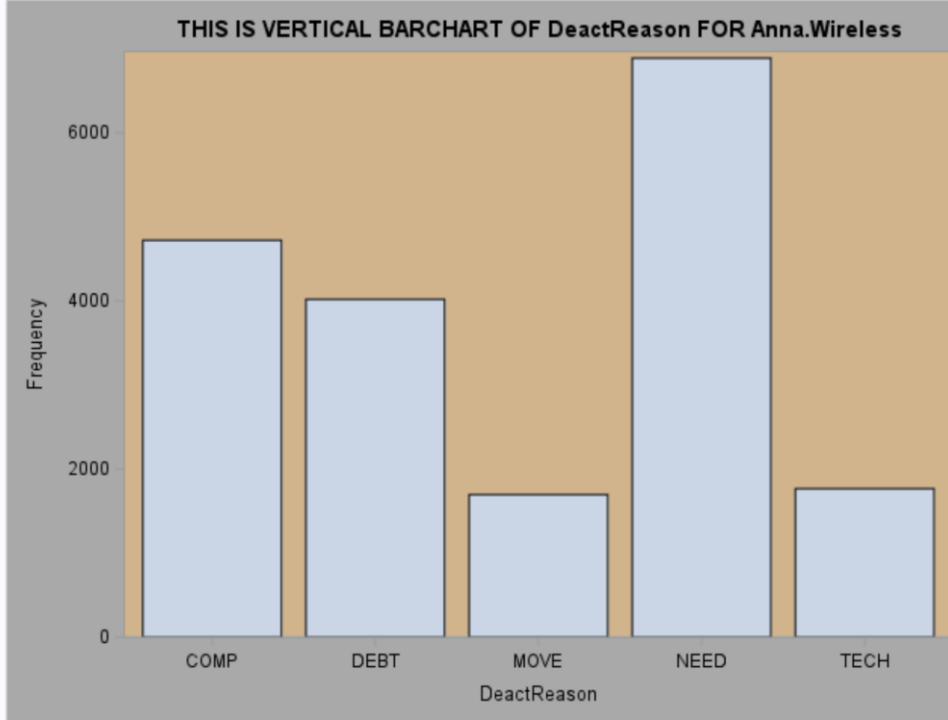
Visualization for DeactReason

THIS IS PIECHART OF DeactReason FOR Anna.Wireless

FREQUENCY of DeactReason



THIS IS VERTICAL BARCHART OF DeactReason FOR Anna.Wireless



THIS IS FREQUENCY OF DeactReason FOR Anna.Wireless

The FREQ Procedure

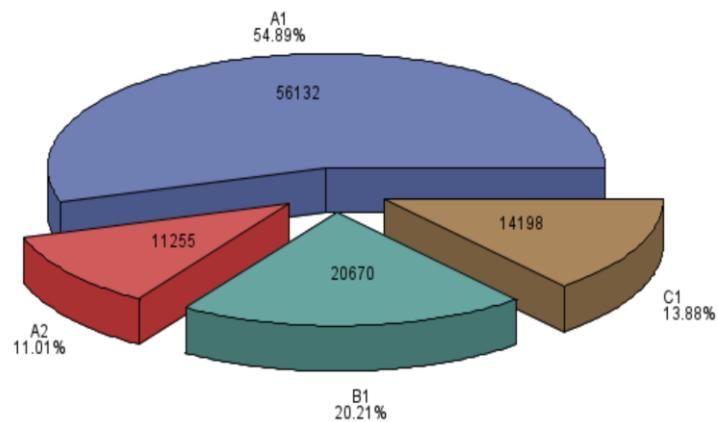
DeactReason	Frequency	Percent	Cumulative Frequency	Cumulative Percent
COMP	4722	24.73	4722	24.73
DEBT	4020	21.05	8742	45.79
MOVE	1696	8.88	10438	54.67
NEED	6888	36.08	17326	90.75
TECH	1767	9.25	19093	100.00

Frequency Missing = 83162

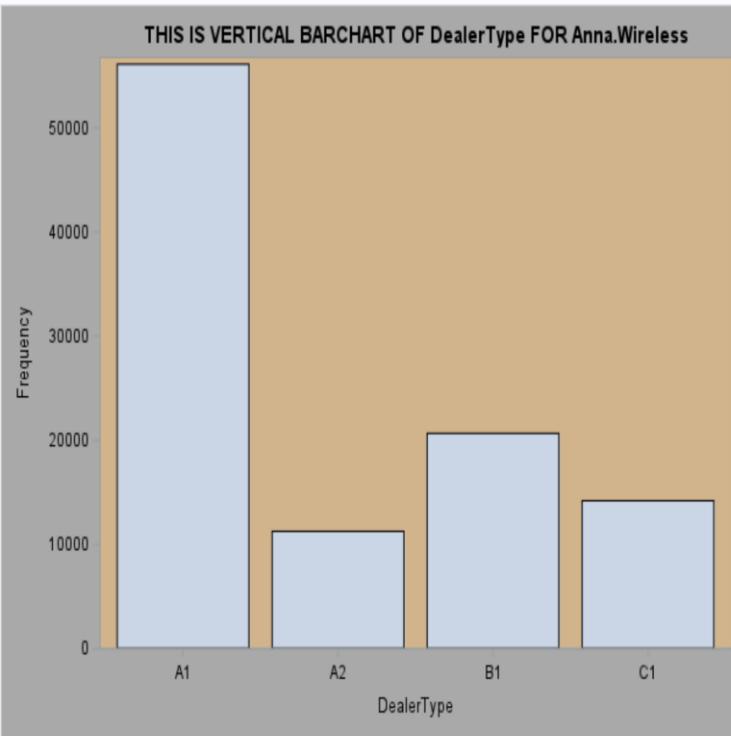
Visualization for Dealer Type

THIS IS PIECHART OF DealerType FOR Anna.Wireless

FREQUENCY of DealerType



THIS IS VERTICAL BARCHART OF DealerType FOR Anna.Wireless



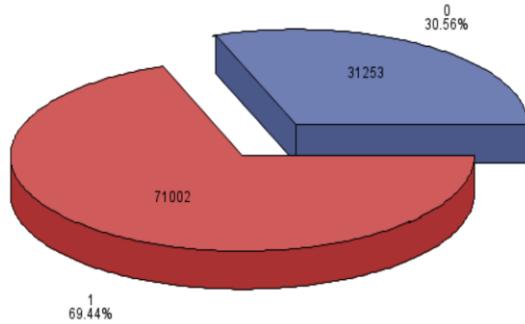
The FREQ Procedure

DealerType	Frequency	Percent	Cumulative Frequency	Cumulative Percent
A1	56132	54.89	56132	54.89
A2	11255	11.01	67387	65.90
B1	20670	20.21	88057	86.12
C1	14198	13.88	102255	100.00

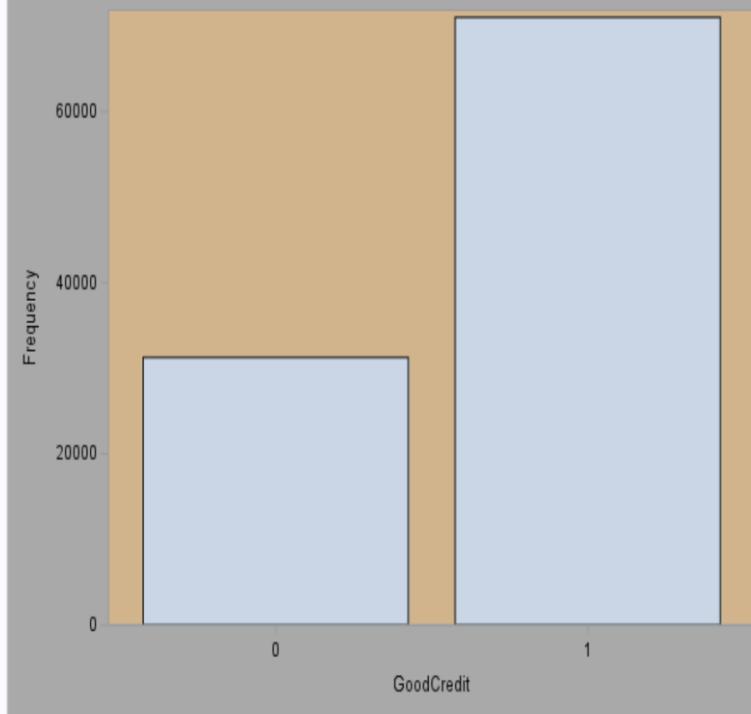
Visualization for Good Credit

THIS IS PIECHART OF GoodCredit FOR Anna.Wireless

FREQUENCY of GoodCredit



THIS IS VERTICAL BARCHART OF GoodCredit FOR Anna.Wireless



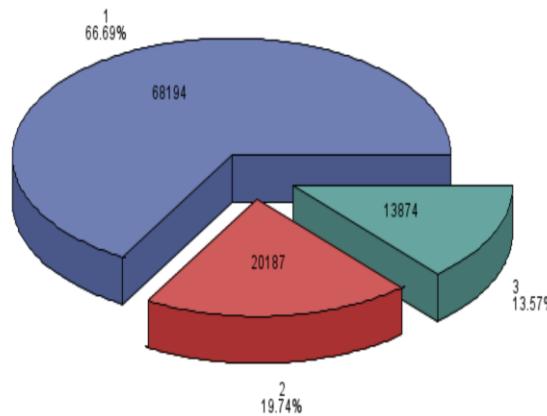
The FREQ Procedure

GoodCredit	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	31253	30.56	31253	30.56
1	71002	69.44	102255	100.00

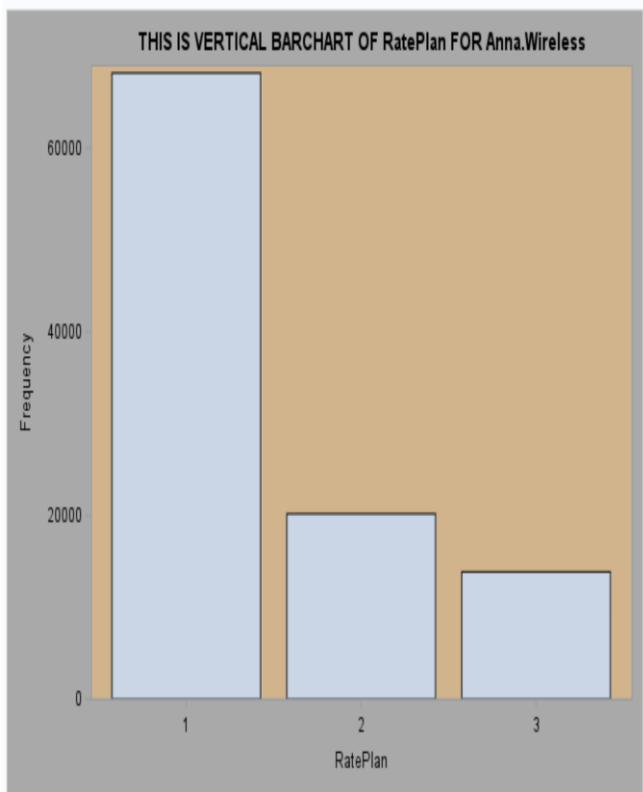
Visualization for Rate Plan

THIS IS PIECHART OF RatePlan FOR Anna.Wireless

FREQUENCY of RatePlan



THIS IS VERTICAL BARCHART OF RatePlan FOR Anna.Wireless



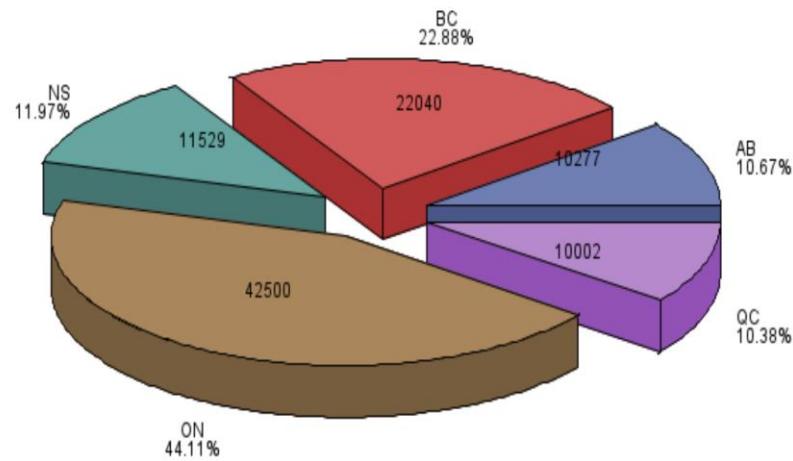
The FREQ Procedure

RatePlan	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	68194	66.69	68194	66.69
2	20187	19.74	88381	86.43
3	13874	13.57	102255	100.00

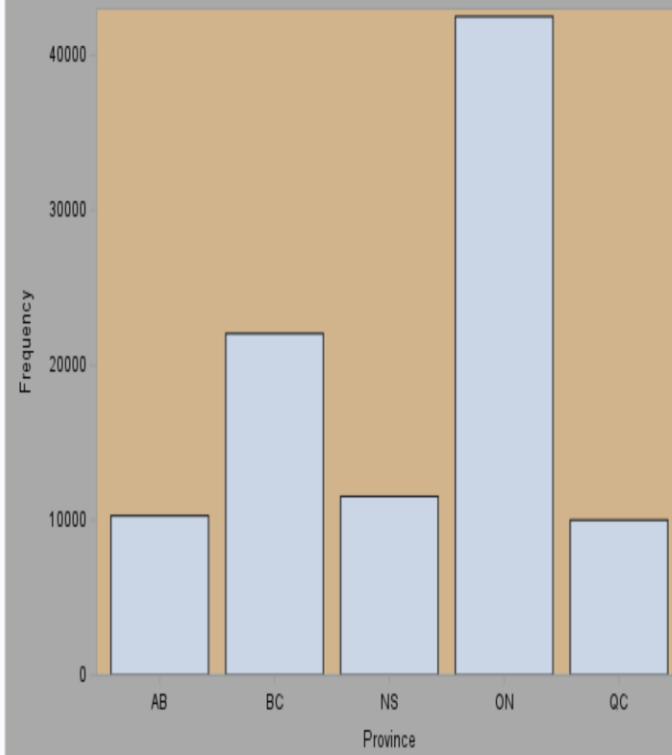
Visualization for Province

THIS IS PIECHART OF Province FOR Anna.Wireless

FREQUENCY of Province



THIS IS VERTICAL BARCHART OF Province FOR Anna.Wireless



The FREQ Procedure

Province	Frequency	Percent	Cumulative Frequency	Cumulative Percent
AB	10277	10.67	10277	10.67
BC	22040	22.88	32317	33.54
NS	11529	11.97	43846	45.51
ON	42500	44.11	86346	89.62
QC	10002	10.38	96348	100.00

Frequency Missing = 5907

1.2 Province and Account Status

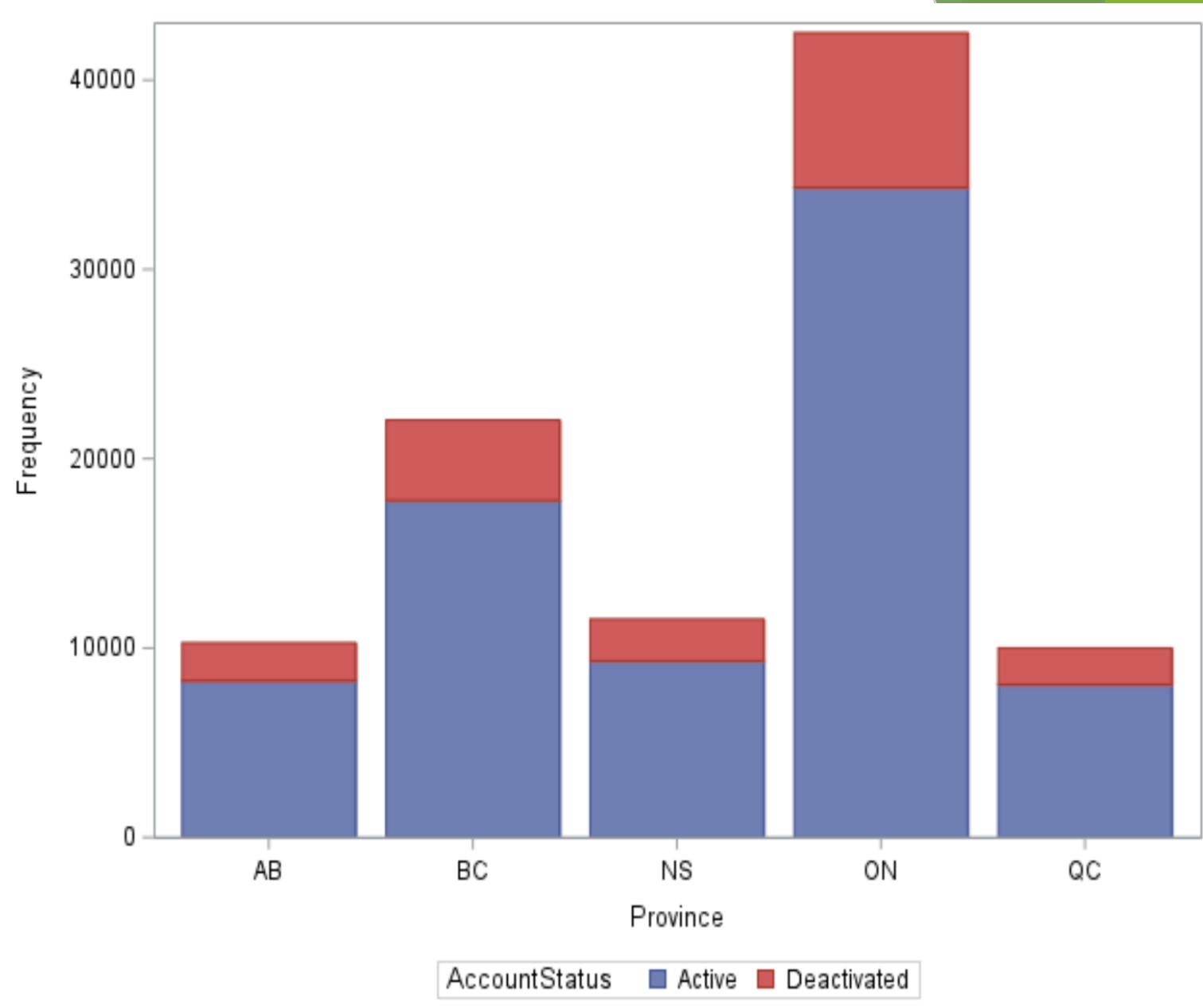
The FREQ Procedure

Frequency	Table of Province by AccountStatus			
	Province	AccountStatus		
Percent		Active	Deactivated	Total
AB	8277	2000	10277	
	8.59	2.08	10.67	
	80.54	19.46		
	10.64	10.79		
Row Pct	BC	17805	4235	22040
		18.48	4.40	22.88
		80.78	19.22	
		22.88	22.85	
Col Pct	NS	9327	2202	11529
		9.68	2.29	11.97
		80.90	19.10	
		11.99	11.88	
Total	ON	34326	8174	42500
		35.63	8.48	44.11
		80.77	19.23	
		44.11	44.10	
Frequency	QC	8079	1923	10002
		8.39	2.00	10.38
		80.77	19.23	
		10.38	10.38	
Missing	Total	77814	18534	96348
		80.76	19.24	100.00
Frequency Missing = 5907				

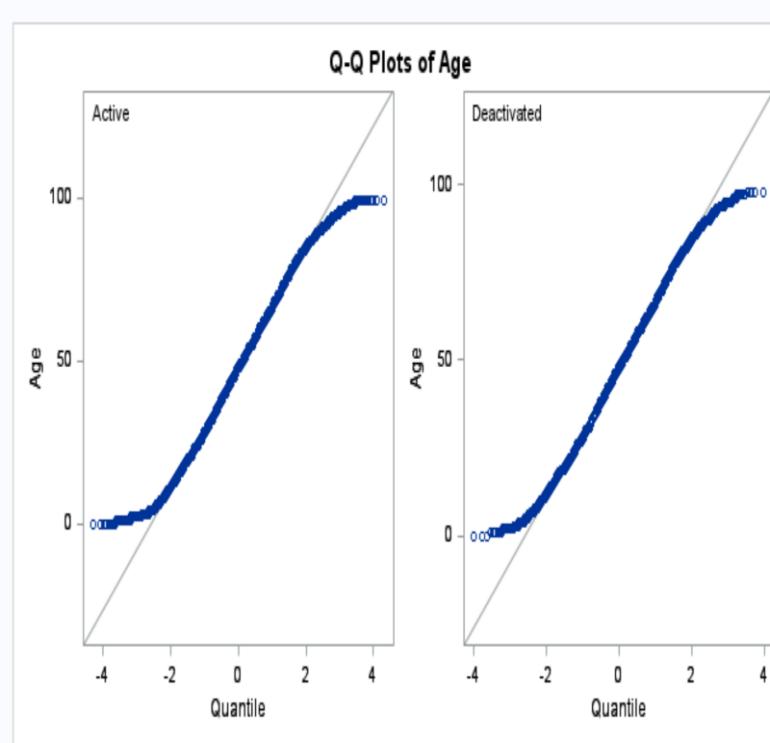
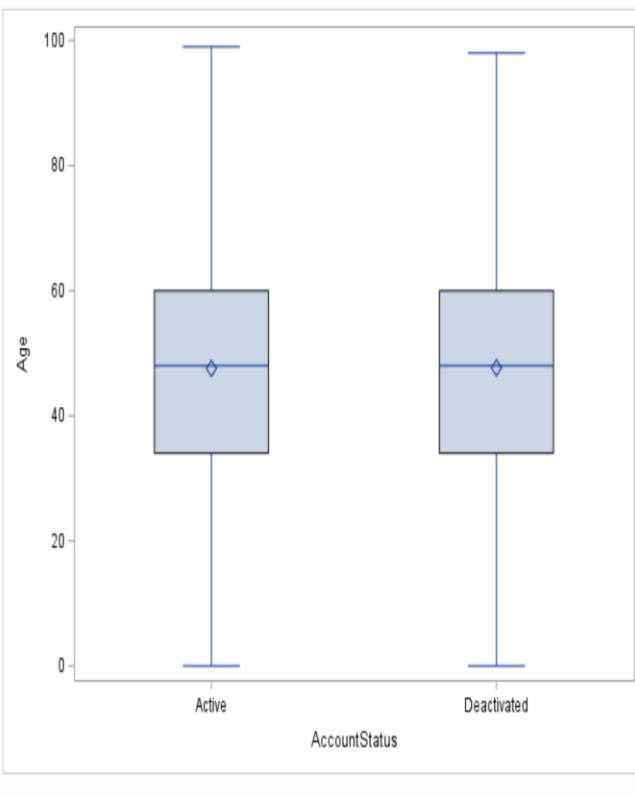
Statistics for Table of Province by AccountStatus

Statistic	DF	Value	Prob
Chi-Square	4	0.4797	0.9754
Likelihood Ratio Chi-Square	4	0.4790	0.9755
Mantel-Haenszel Chi-Square	1	0.0920	0.7616
Phi Coefficient		0.0022	
Contingency Coefficient		0.0022	
Cramer's V		0.0022	

Sample Size = 96348
Frequency Missing = 5907



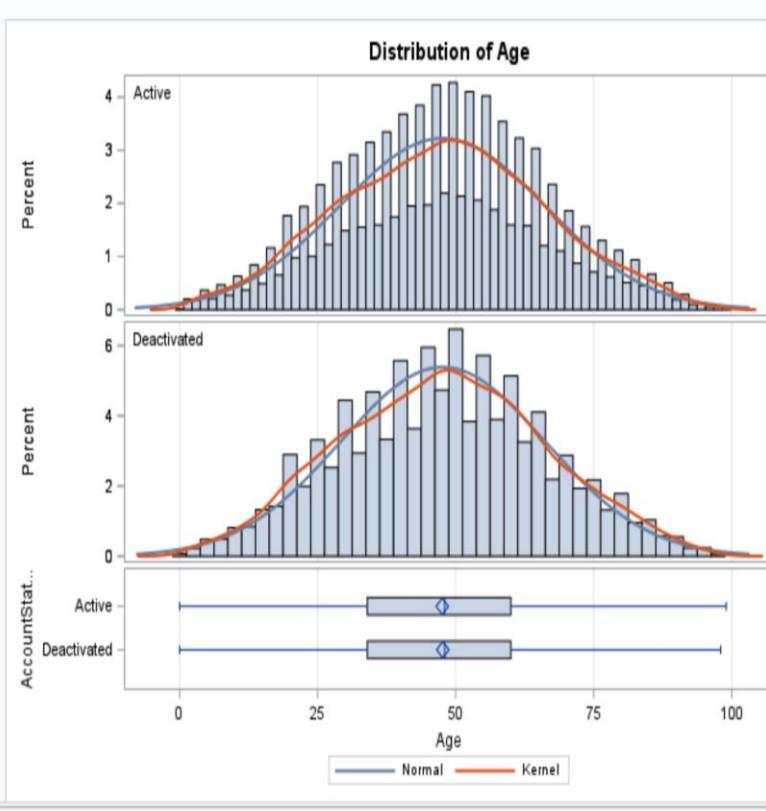
1.2.a Age and Account Status



The MEANS Procedure

Analysis Variable : Age						
AccountStatus	N Obs	N	N Miss	Minimum	Mean	Maximum
Active	82620	76377	6243	0	47.5732223	99.0000000
Deactivated	19635	18170	1465	0	47.6720969	98.0000000

Age and Account Status



The TTEST Procedure

Variable: Age

AccountStatus	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Active		76377	47.5732	18.5639	0.0672	0	99.0000
Deactivated		18170	47.6721	18.5204	0.1374	0	98.0000
Diff (1-2)	Pooled		-0.0989	18.5555	0.1532		
Diff (1-2)	Satterthwaite		-0.0989		0.1529		

AccountStatus	Method	Mean	95% CL Mean	Std Dev	95% CL Std Dev		
Active		47.5732	47.4416	47.7049	18.5639	18.4712	18.6574
Deactivated		47.6721	47.4028	47.9414	18.5204	18.3319	18.7128
Diff (1-2)	Pooled	-0.0989	-0.3991	0.2013	18.5555	18.4723	18.6395
Diff (1-2)	Satterthwaite	-0.0989	-0.3986	0.2009			

Method	Variances	DF	t Value	Pr > t
Pooled	Equal	94545	-0.65	0.5186
Satterthwaite	Unequal	27518	-0.65	0.5180

Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	76376	18169	1.00	0.6898

1.3.1 Segmentation - Sales

Obs	AcctNo	Actdt	Deactdt	DeactReason	GoodCredit	RatePlan	DealerType	Age	Province	Sales	Agegroup	SalesClass
1	1176913194483	06/20/1999	.		0	1	A1	58	BC	\$128.00	Middle Aged	Moderate Sales
2	1176914599423	10/04/1999	10/15/1999	NEED	1	1	A1	45	AB	\$72.00	Middle Aged	Low Sales
3	1176951913656	07/01/2000	.		0	1	A1	57	BC	\$593.00	Middle Aged	Above Moderate Sales
4	1176954000288	05/30/2000	.		1	2	A1	47	ON	\$83.00	Middle Aged	Low Sales
5	1176969186303	12/13/2000	.		1	1	C1	82	BC	.	Senior	N/A
6	1176991056273	08/31/1999	09/18/2000	MOVE	1	1	C1	92	QC	\$1041.00	High Sales	
7	1176991866552	05/24/2000	.		1	1	A1	77	ON	.	Senior	N/A
8	1176992889500	11/28/2000	.		1	1	C1	68	AB	\$72.00	Senior	Low Sales
9	1177000067271	12/23/1999	.		0	1	B1	75	ON	\$134.00	Senior	Moderate Sales
10	1177010940613	12/09/1999	.		1	2	A1	42	NS	\$11.00	Middle Aged	Low Sales
11	1177025997013	11/09/1999	.		1	1	A1	26	BC	\$154.00	Adult	Moderate Sales
12	1177027515760	10/19/1999	.		1	1	B1	73	BC	\$16.00	Senior	Low Sales
13	1177028996676	09/21/2000	.		0	1	C1	.	QC	\$179.00	N/A	Moderate Sales
14	1177038747105	03/14/2000	.		0	1	C1	41	ON	\$705.00	Middle Aged	Above Moderate Sales
15	1177045857516	06/22/2000	.		1	1	A1	53	QC	\$83.00	Middle Aged	Low Sales
16	1177057406016	09/21/2000	.		0	1	C1	50	ON	\$529.00	Middle Aged	Above Moderate Sales
17	1177066422248	04/26/1999	01/15/2001	NEED	0	1	A2	55	NS	\$44.00	Middle Aged	Low Sales
18	1177089399155	08/17/2000	.		1	3	A1	56	BC	\$548.00	Middle Aged	Above Moderate Sales
19	1177113886410	09/13/2000	01/08/2001	COMP	0	1	C1	45	ON	\$63.00	Middle Aged	Low Sales
20	1177128264924	12/10/1999	.		1	1	B1	38	ON	\$178.00	Adult	Moderate Sales
21	1177135400264	12/09/2000	.		0	1	A1	42	ON	\$345.00	Middle Aged	Moderate Sales
22	1177169300842	03/24/2000	.		0	3	B1	54	ON	\$331.00	Middle Aged	Moderate Sales
23	1177177440963	02/15/2000	.		0	1	B1	23	BC	\$97.00	Adult	Low Sales

1.3.2 Segmentation - Age

Obs	AcctNo	Actdt	Deactdt	DeactReason	GoodCredit	RatePlan	DealerType	Age	Province	Sales	AccountStatus	Agegroup
1	1176913194483	06/20/1999	-		0	1	A1	58	BC	\$128.00	Active	Middle Aged
2	1176914599423	10/04/1999	10/15/1999	NEED	1	1	A1	45	AB	\$72.00	Deactivated	Middle Aged
3	1176951913656	07/01/2000	-		0	1	A1	57	BC	\$593.00	Active	Middle Aged
4	1176954000288	05/30/2000	-		1	2	A1	47	ON	\$83.00	Active	Middle Aged
5	1176969186303	12/13/2000	-		1	1	C1	82	BC	-	Active	Senior
6	1176991056273	08/31/1999	09/18/2000	MOVE	1	1	C1	92	QC	\$1041.00	Deactivated	Senior
7	1176991866552	05/24/2000	-		1	1	A1	77	ON	-	Active	Senior
8	1176992889500	11/28/2000	-		1	1	C1	68	AB	\$72.00	Active	Senior
9	1177000067271	12/23/1999	-		0	1	B1	75	ON	\$134.00	Active	Senior
10	1177010940613	12/09/1999	-		1	2	A1	42	NS	\$11.00	Active	Middle Aged
11	1177025997013	11/09/1999	-		1	1	A1	26	BC	\$154.00	Active	Adult
12	1177027515760	10/19/1999	-		1	1	B1	73	BC	\$16.00	Active	Senior
13	1177028996676	09/21/2000	-		0	1	C1	-	QC	\$179.00	Active	N/A
14	1177038747105	03/14/2000	-		0	1	C1	41	ON	\$705.00	Active	Middle Aged
15	1177045857516	06/22/2000	-		1	1	A1	53	QC	\$83.00	Active	Middle Aged
16	1177057406016	09/21/2000	-		0	1	C1	50	ON	\$529.00	Active	Middle Aged
17	1177066422248	04/26/1999	01/15/2001	NEED	0	1	A2	55	NS	\$44.00	Deactivated	Middle Aged
18	1177089399155	08/17/2000	-		1	3	A1	56	BC	\$548.00	Active	Middle Aged
19	1177113886410	09/13/2000	01/08/2001	COMP	0	1	C1	45	ON	\$63.00	Deactivated	Middle Aged
20	1177128264924	12/10/1999	-		1	1	B1	38	ON	\$178.00	Active	Adult
21	1177135400264	12/09/2000	-		0	1	A1	42	ON	\$345.00	Active	Middle Aged
22	1177169300842	03/24/2000	-		0	3	B1	54	ON	\$331.00	Active	Middle Aged
23	1177177440963	02/15/2000	-		0	1	B1	23	BC	\$97.00	Active	Adult

1.4.1 Tenure Segment

Obs	AcctNo	Actdt	Deactdt	DeactReason	GoodCredit	RatePlan	DealerType	Age	Province	Sales	AccountStatus	lastdate	Tenure_in_Days	Tenuregroup
1	1176913194483	06/20/1999	-		0	1	A1	58	BC	\$128.00	Active	14995	580	Longest Tenure
2	1176914599423	10/04/1999	10/15/1999	NEED	1	1	A1	45	AB	\$72.00	Deactivated	14995	11	Least Tenure
3	1176951913656	07/01/2000	-		0	1	A1	57	BC	\$593.00	Active	14995	203	Year Tenure
4	1176954000288	05/30/2000	-		1	2	A1	47	ON	\$83.00	Active	14995	235	Year Tenure
5	1176969186303	12/13/2000	-		1	1	C1	82	BC	\$181.25	Active	14995	38	Months Tenure
6	1176991056273	08/31/1999	09/18/2000	MOVE	1	1	C1	92	QC	\$1041.00	Deactivated	14995	384	Longest Tenure
7	1176991866552	05/24/2000	-		1	1	A1	77	ON	\$181.25	Active	14995	241	Year Tenure
8	1176992889500	11/28/2000	-		1	1	C1	68	AB	\$72.00	Active	14995	53	Months Tenure
9	1177000067271	12/23/1999	-		0	1	B1	75	ON	\$134.00	Active	14995	394	Longest Tenure
10	1177010940613	12/09/1999	-		1	2	A1	42	NS	\$11.00	Active	14995	408	Longest Tenure
11	1177025997013	11/09/1999	-		1	1	A1	26	BC	\$154.00	Active	14995	438	Longest Tenure
12	1177027515760	10/19/1999	-		1	1	B1	73	BC	\$16.00	Active	14995	459	Longest Tenure
13	1177028996676	09/21/2000	-		0	1	C1	-	QC	\$179.00	Active	14995	121	Year Tenure
14	1177038747105	03/14/2000	-		0	1	C1	41	ON	\$705.00	Active	14995	312	Year Tenure
15	1177045857516	06/22/2000	-		1	1	A1	53	QC	\$83.00	Active	14995	212	Year Tenure
16	1177057406016	09/21/2000	-		0	1	C1	50	ON	\$529.00	Active	14995	121	Year Tenure
17	1177066422248	04/26/1999	01/15/2001	NEED	0	1	A2	55	NS	\$44.00	Deactivated	14995	630	Longest Tenure
18	1177089399155	08/17/2000	-		1	3	A1	56	BC	\$548.00	Active	14995	156	Year Tenure
19	1177113886410	09/13/2000	01/08/2001	COMP	0	1	C1	45	ON	\$63.00	Deactivated	14995	117	Year Tenure
20	1177128264924	12/10/1999	-		1	1	B1	38	ON	\$178.00	Active	14995	407	Longest Tenure
21	1177135400264	12/09/2000	-		0	1	A1	42	ON	\$345.00	Active	14995	42	Months Tenure

1.4.2 Number of Accounts Deactivated in each month.

Deactdt	Frequency	Percent	Cumulative Frequency	Cumulative Percent
JAN1999	2	0.01	2	0.01
FEB1999	21	0.11	23	0.12
MAR1999	40	0.20	63	0.32
APR1999	45	0.23	108	0.55
MAY1999	123	0.63	231	1.18
JUN1999	245	1.25	476	2.42
JUL1999	282	1.44	758	3.86
AUG1999	402	2.05	1160	5.91
SEP1999	421	2.14	1581	8.05
OCT1999	516	2.63	2097	10.68
NOV1999	449	2.29	2546	12.97
DEC1999	599	3.05	3145	16.02
JAN2000	636	3.24	3781	19.26
FEB2000	532	2.71	4313	21.97
MAR2000	720	3.67	5033	25.63
APR2000	686	3.49	5719	29.13
MAY2000	791	4.03	6510	33.16
JUN2000	1158	5.90	7668	39.05
JUL2000	1098	5.59	8766	44.64
AUG2000	1092	5.56	9858	50.21
SEP2000	1296	6.60	11154	56.81
OCT2000	2301	11.72	13455	68.53
NOV2000	1627	8.29	15082	76.81

DEC2000	2697	13.74	17779	90.55
JAN2001	1856	9.45	19635	100.00
Frequency Missing = 82620				

1.4.4 Tenure group and Good Credit

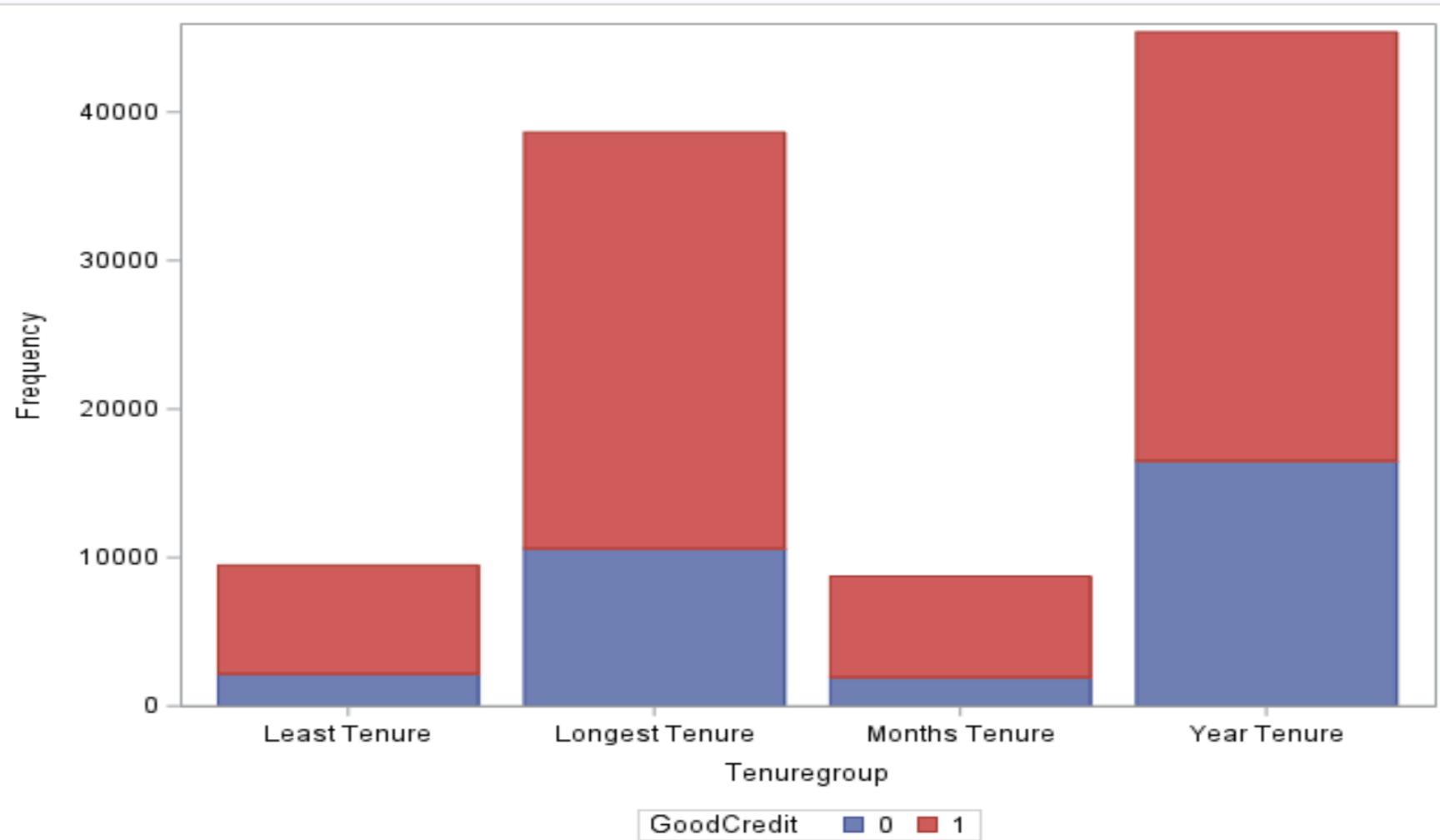
The FREQ Procedure

Frequency	Table of Tenuregroup by GoodCredit		
Tenuregroup	GoodCredit		
	0	1	Total
Least Tenure	2179	7307	9486
	2.13	7.15	9.28
	22.97	77.03	
	6.97	10.29	
Longest Tenure	10614	28022	38636
	10.38	27.40	37.78
	27.47	72.53	
	33.96	39.47	
Months Tenure	1941	6803	8744
	1.90	6.65	8.55
	22.20	77.80	
	6.21	9.58	
Year Tenure	16519	28870	45389
	16.15	28.23	44.39
	36.39	63.61	
	52.86	40.66	
Total	31253	71002	102255
	30.56	69.44	100.00

Statistics for Table of Tenuregroup by GoodCredit

Statistic	DF	Value	Prob
Chi-Square	3	1447.1671	<.0001
Likelihood Ratio Chi-Square	3	1460.0298	<.0001
Mantel-Haenszel Chi-Square	1	1090.7186	<.0001
Phi Coefficient		0.1190	
Contingency Coefficient		0.1181	
Cramer's V		0.1190	

Tenure group and Good Credit



1.4.4a Tenure Group and RatePlan

The FREQ Procedure

Frequency Percent Row Pct Col Pct	Table of Tenuregroup by RatePlan				
	Tenuregroup	RatePlan			
		1	2	3	Total
Least Tenure	4120	4463	903	9486	
	4.03	4.36	0.88	9.28	
	43.43	47.05	9.52		
	6.04	22.11	6.51		
Longest Tenure	28050	4974	5612	38636	
	27.43	4.86	5.49	37.78	
	72.60	12.87	14.53		
	41.13	24.64	40.45		
Months Tenure	3917	4019	808	8744	
	3.83	3.93	0.79	8.55	
	44.80	45.96	9.24		
	5.74	19.91	5.82		
Year Tenure	32107	6731	6551	45389	
	31.40	6.58	6.41	44.39	
	70.74	14.83	14.43		
	47.08	33.34	47.22		
Total	68194	20187	13874	102255	
	66.69	19.74	13.57	100.00	

1.4.5 Tenuregroup and Account Status

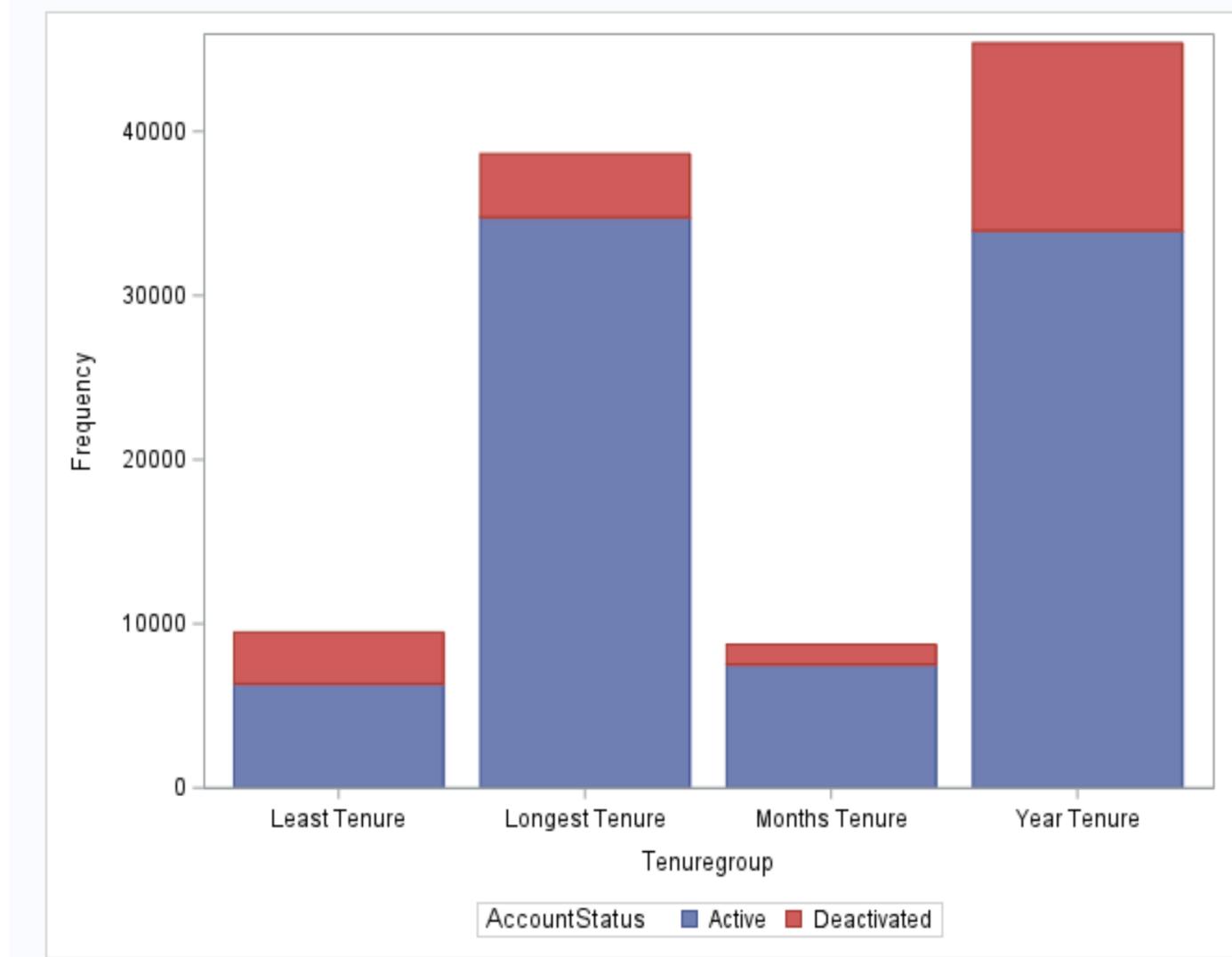
The FREQ Procedure

Frequency Percent Row Pct Col Pct	Table of Tenuregroup by AccountStatus			
	Tenuregroup	AccountStatus		
		Active	Deactivated	Total
Least Tenure	6353	3133	9486	
	6.21	3.06	9.28	
	66.97	33.03		
	7.69	15.96		
Longest Tenure	34777	3859	38636	
	34.01	3.77	37.78	
	90.01	9.99		
	42.09	19.65		
Months Tenure	7528	1216	8744	
	7.36	1.19	8.55	
	86.09	13.91		
	9.11	6.19		
Year Tenure	33962	11427	45389	
	33.21	11.18	44.39	
	74.82	25.18		
	41.11	58.20		
Total	82620	19635	102255	
	80.80	19.20	100.00	

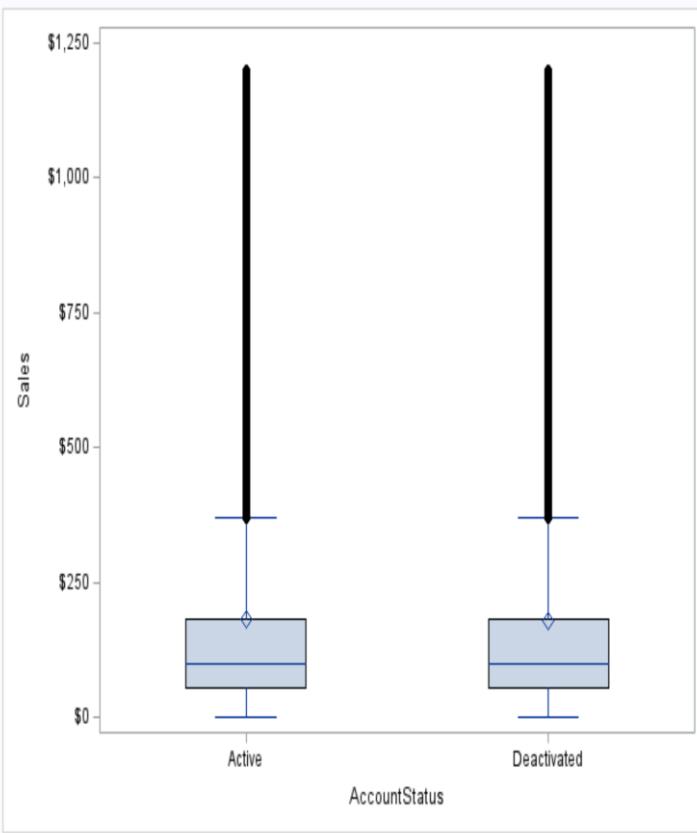
Statistics for Table of Tenuregroup by AccountStatus

Statistic	DF	Value	Prob
Chi-Square	3	4484.8512	<.0001
Likelihood Ratio Chi-Square	3	4624.3636	<.0001
Mantel-Haenszel Chi-Square	1	711.8833	<.0001
Phi Coefficient		0.2094	
Contingency Coefficient		0.2050	
Cramer's V		0.2094	

Tenuregroup and Account Status



1.4.6a Sales and Account Status



The TTEST Procedure

Variable: Sales

AccountStatus	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Active		82620	181.5	224.4	0.7808	0	1200.0
Deactivated		19635	180.0	221.8	1.5826	0	1199.0
Diff (1-2)	Pooled		1.4968	223.9	1.7777		
Diff (1-2)	Satterthwaite		1.4968		1.7647		

AccountStatus	Method	Mean	95% CL Mean	Std Dev	95% CL Std Dev		
Active		181.5	180.0	224.4	223.3	225.5	
Deactivated		180.0	176.9	221.8	219.6	224.0	
Diff (1-2)	Pooled	1.4968	-1.9875	4.9810	223.9	222.9	224.9
Diff (1-2)	Satterthwaite	1.4968	-1.9621	4.9556			

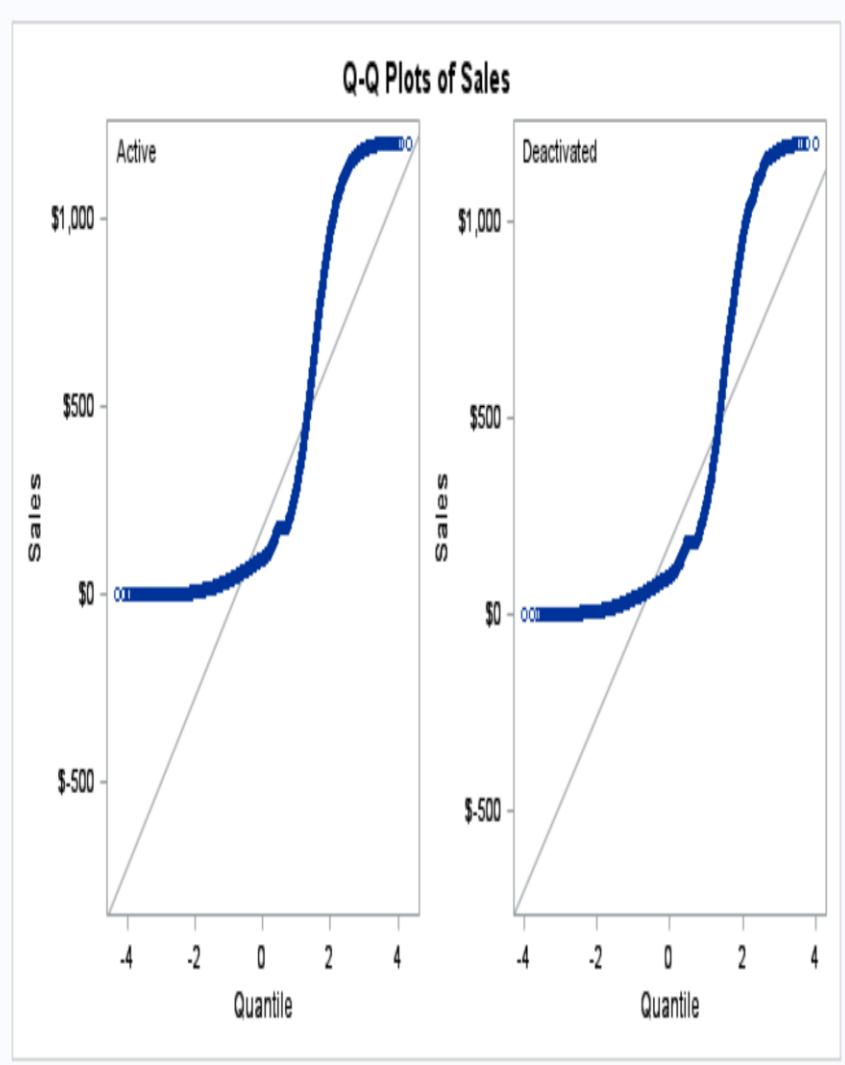
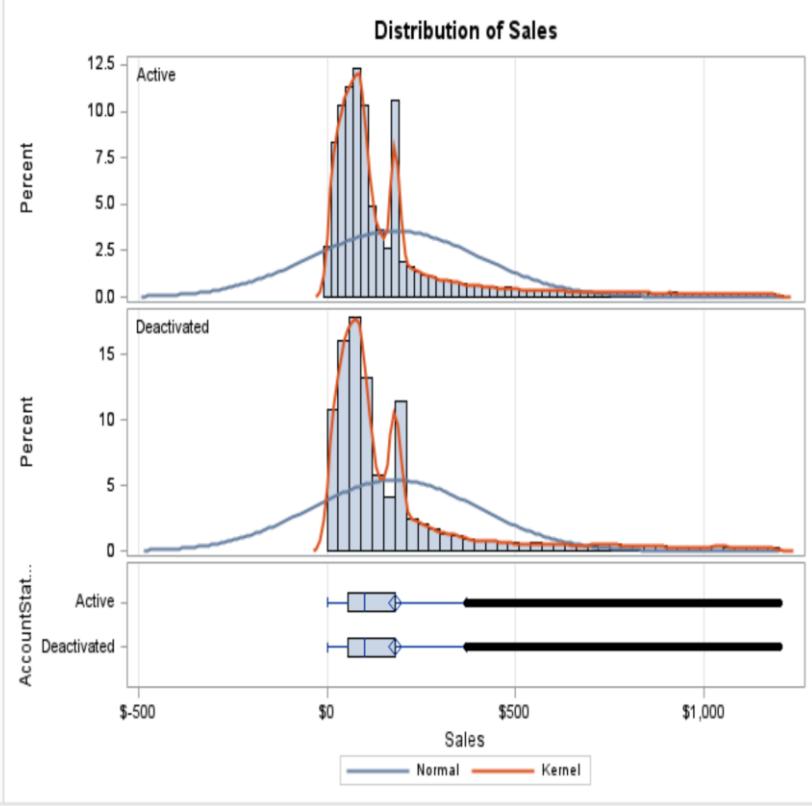
The MEANS Procedure

Analysis Variable : Sales														
AccountStatus	N Obs	N	N Miss	Minimum	Lower Quartile	Median	Mean	Upper Quartile	Maximum	Quartile Range	Coeff of Variation	Lower 95% CL for Mean	Upper 95% CL for Mean	
Active	82620	75675	6945	0.00	52.00	91.00	181.56	191.00	1200.00	139.00	129.15	179.89	183.23	
Deactivated	19635	17975	1660	0.00	53.00	91.00	179.93	188.00	1199.00	135.00	128.81	176.54	183.31	

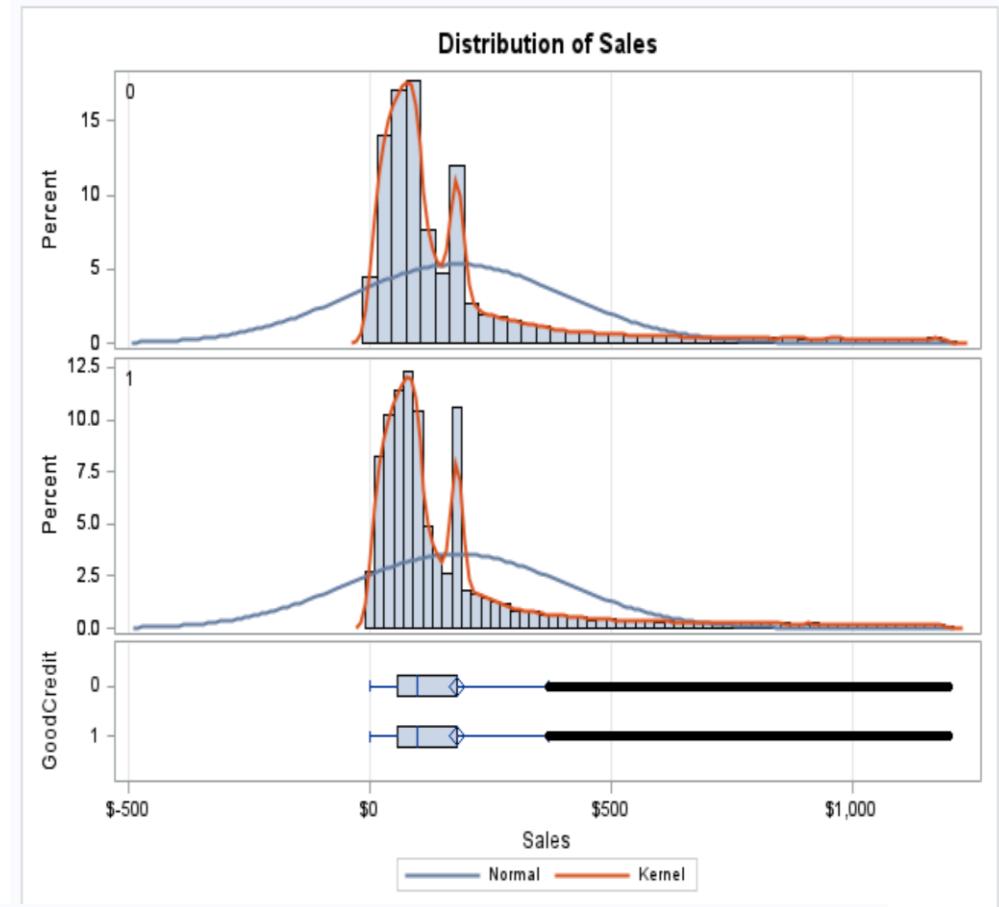
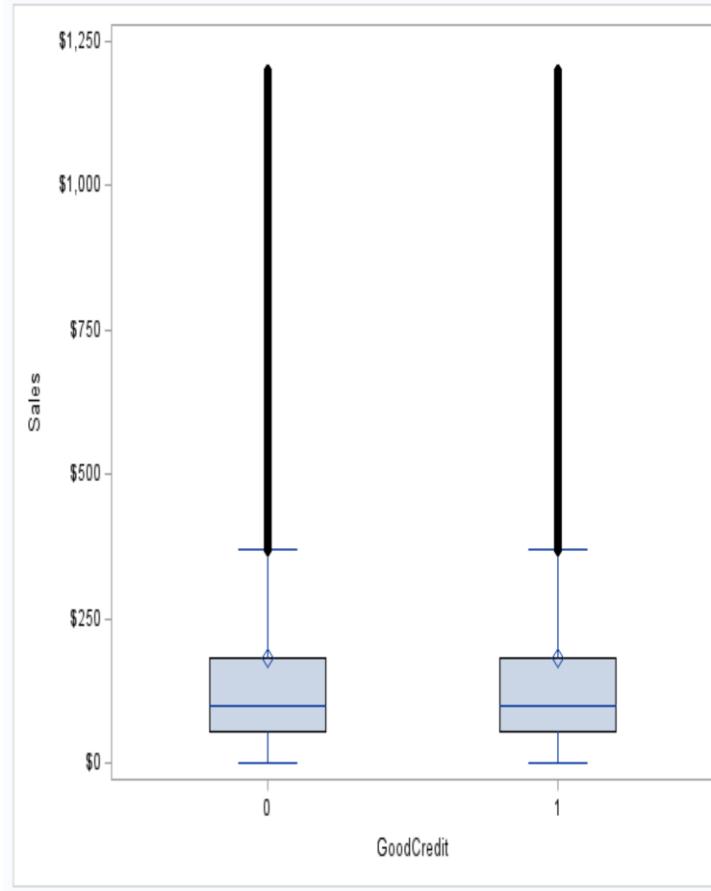
Sales and Account Status

Method	Variances	DF	t Value	Pr > t
Pooled	Equal	102253	0.84	0.3998
Satterthwaite	Unequal	29933	0.85	0.3963

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	82619	19634	1.02	0.0341



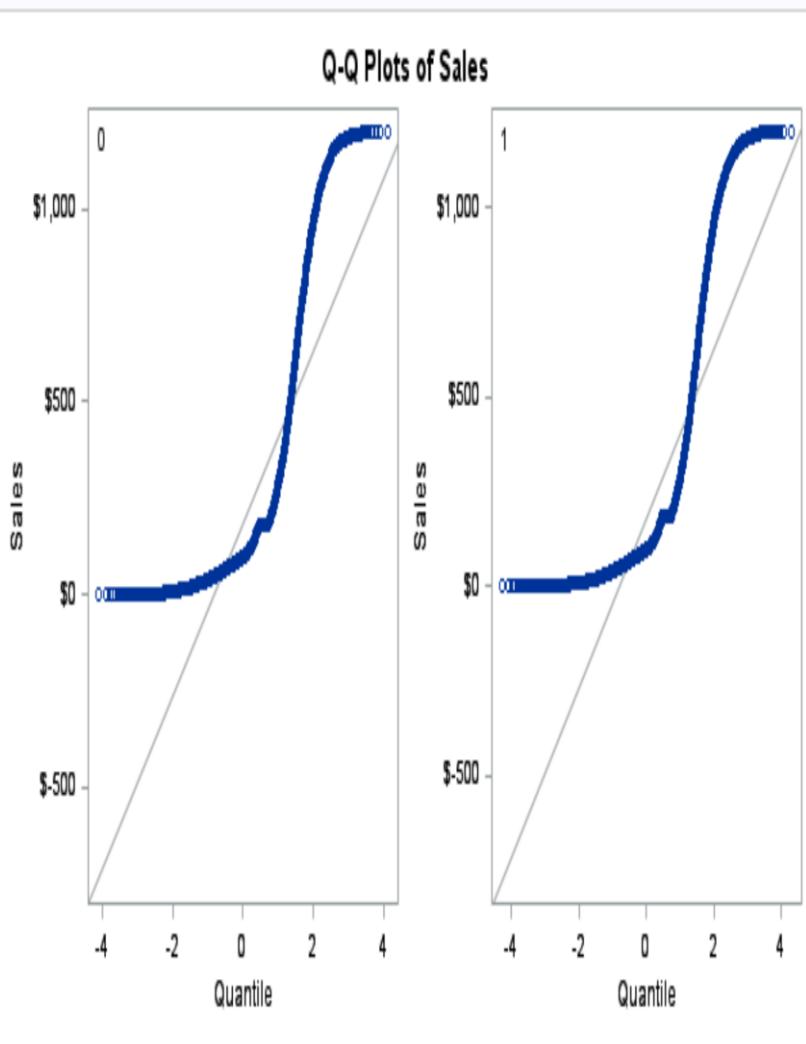
1.4.6b Sales and Good Credit



The MEANS Procedure

Analysis Variable : Sales														
GoodCredit	N Obs	N	N Miss	Minimum	Lower Quartile	Median	Mean	Upper Quartile	Maximum	Quartile Range	Coeff of Variation	Lower 95% CL for Mean	Upper 95% CL for Mean	
0	31253	28599	2654	0.00	52.00	91.00	181.57	190.00	1200.00	138.00	129.34	178.85	184.29	
1	71002	65051	5951	0.00	53.00	91.00	181.10	190.00	1200.00	137.00	128.98	179.31	182.90	

Sales and Good Credit



The TTEST Procedure
Variable: Sales

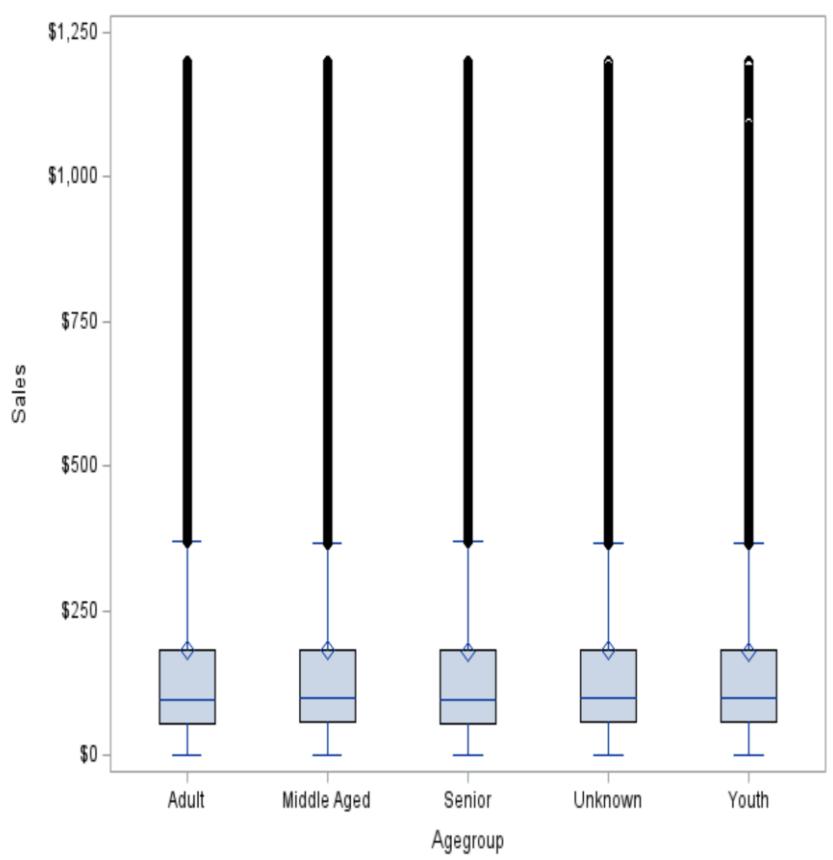
GoodCredit	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
0		31253	181.5	224.6	1.2707	0	1200.0
1		71002	181.1	223.6	0.8391	0	1200.0
Diff (1-2)	Pooled		0.4268	223.9	1.5200		
Diff (1-2)	Satterthwaite		0.4268		1.5228		

GoodCredit	Method	Mean	95% CL Mean	Std Dev	95% CL Std Dev		
0		181.5	179.1	184.0	224.6	222.9	226.4
1		181.1	179.5	182.8	223.6	222.4	224.8
Diff (1-2)	Pooled	0.4268	-2.5524	3.4059	223.9	222.9	224.9
Diff (1-2)	Satterthwaite	0.4268	-2.5579	3.4114			

Method	Variances	DF	t Value	Pr > t
Pooled	Equal	102253	0.28	0.7789
Satterthwaite	Unequal	59471	0.28	0.7793

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	31252	71001	1.01	0.3247

Sales and Agegroup



The ANOVA Procedure

Dependent Variable: Sales

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	103449	25862	0.52	0.7241
Error	102250	5126472031	50137		
Corrected Total	102254	5126575480			

R-Square	Coeff Var	Root MSE	Sales Mean
0.000020	123.5403	223.9121	181.2462

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Agegroup	4	103448.9938	25862.2485	0.52	0.7241

The MEANS Procedure

Analysis Variable : Sales

Agegroup	N Obs	N	N Miss	Minimum	Mean	Maximum
Adult	25518	25518	0	0	181.9486245	1200.00
Middle Aged	37701	37701	0	0	181.7476062	1200.00
Senior	25010	25010	0	0	180.2579528	1200.00
Unknown	7708	7708	0	0	182.0306421	1200.00
Youth	6318	6318	0	0	178.3714984	1198.00

Comments and Recommendations

- ▶ Having a large number of deactivated accounts in the province of Ontario, I therefore recommend based on my analysis that they should give customers better plan on this province to reduce customer attrition.
- ▶ And given the month of October to December, with the greater number of deactivation of accounts they should have better promotions offer to customers within this period.
- ▶ With the **need** to deactivate service having the greater amount on frequency on reasons of deactivation, they should gather enough data from the customer to improve their service.

Thank You