Table: Platform, Make & OS Version vs Install

			install	
			0	1
			N	N
device_platform_class	device_make_class	device_os_class		
android	10	10	2049	16
iOS	1	1	18329	143
		2	2067	20
		3	3969	33
		4	3485	38
		5	1276	10
		6	1376	10
		8	796	1
		9	707	.
		10	1860	16
	2	1	12825	108
		2	1933	8
		3	3250	12
		4	2331	20
		5	884	5
		6	912	11
		8	627	5
		9	393	3
		10	2093	8
	3	1	5992	44
		2	1054	4
		3	1359	7
		4	1036	10
		5	605	10
		6	279	2
		7	54	.
		8	367	5
		9	335	1
		10	1264	2
	4	1	3950	51
		2	1255	6
		3	538	3
		4	992	16
		5	713	4

(Continued)

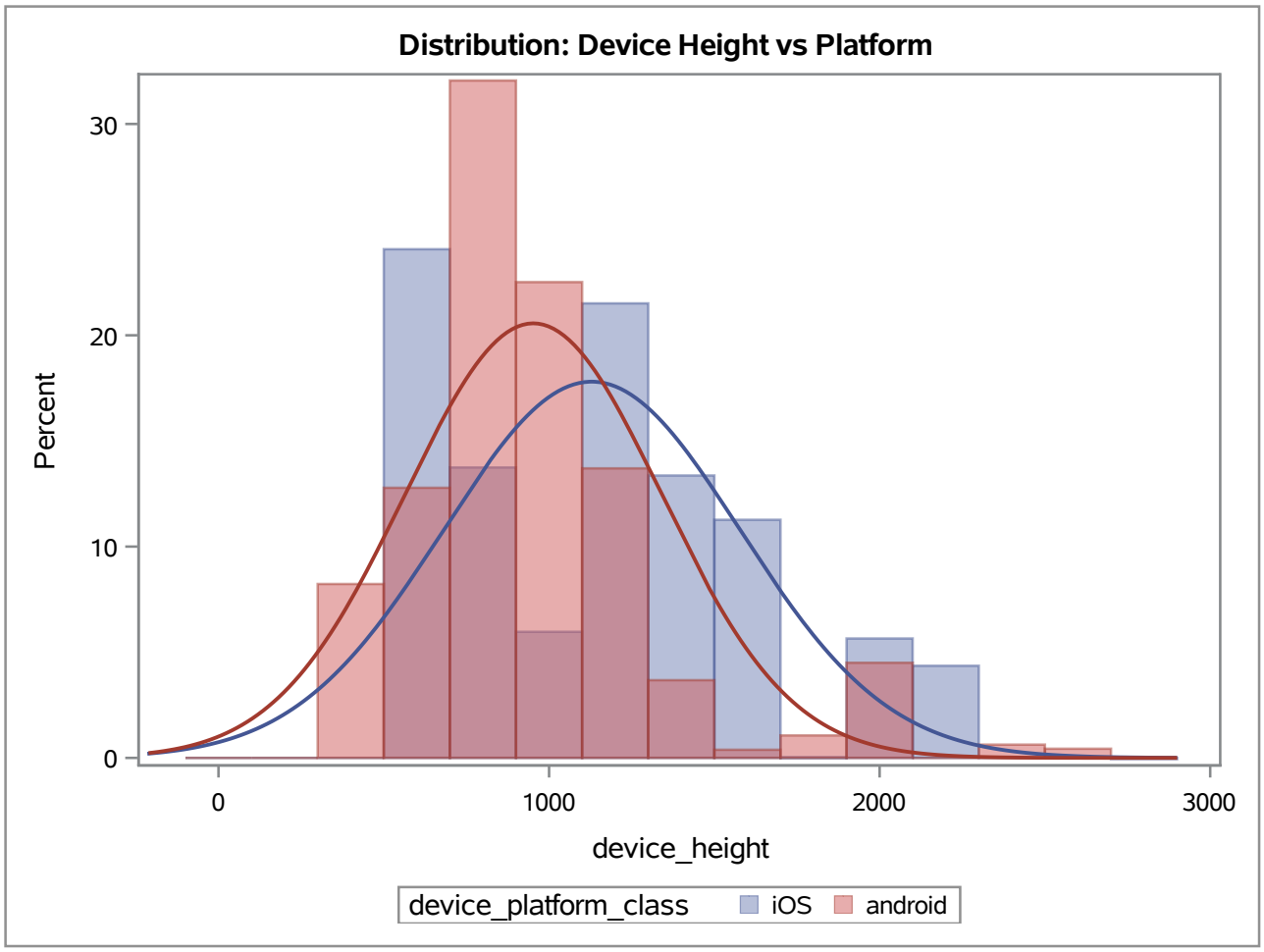
Table: Platform, Make & OS Version vs Install

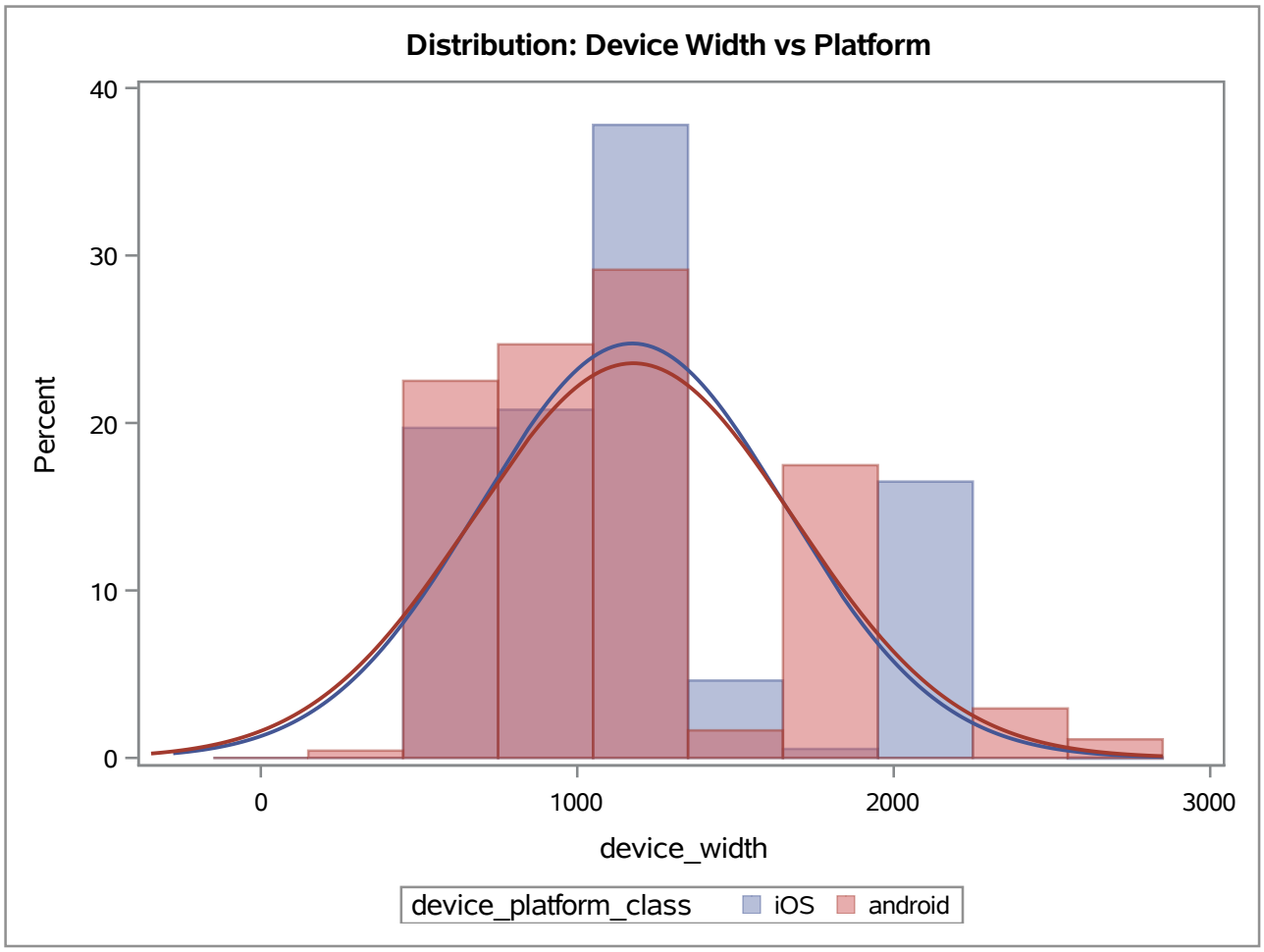
			install	
			0	1
			N	N
device_platform_class	device_make_class	device_os_class		
iOS	4	6	157	2
		7	75	.
		8	523	7
		9	268	1
		10	1356	10
	5	1	3746	28
		2	737	5
		3	858	2
		4	597	10
		5	368	3
		6	184	1
		7	61	.
		8	279	2
		9	126	1
		10	1085	7
	6	2	4882	31
		5	543	2
		7	164	.
		8	333	3
		9	182	1
		10	1674	9
	7	1	2562	38
		3	576	9
		4	1249	17
		6	589	13
		10	2153	29
	8	1	1965	16
		2	455	2
		3	225	.
		4	565	11
		5	258	2
		6	70	.
		8	219	3
		9	86	2

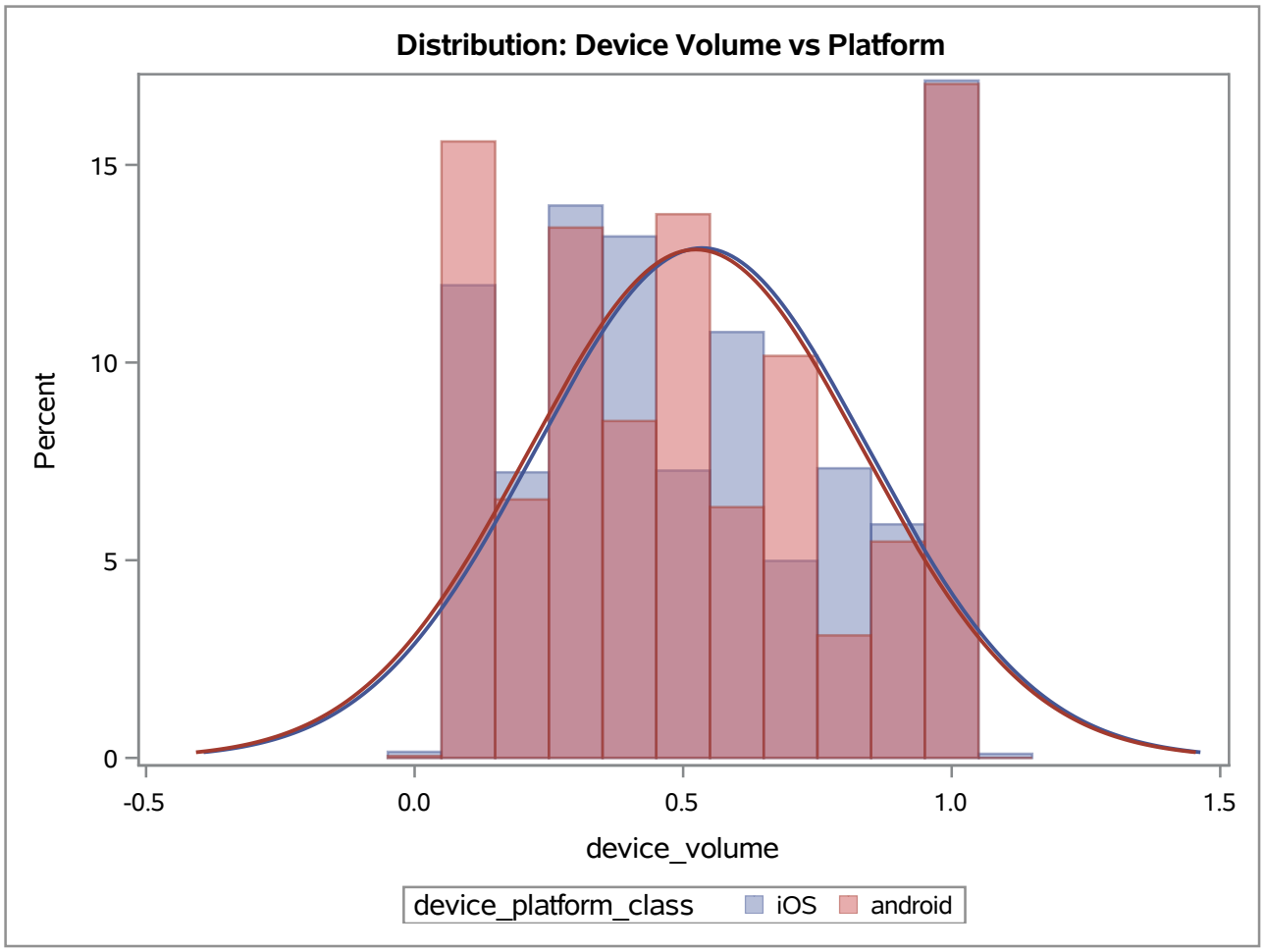
(Continued)

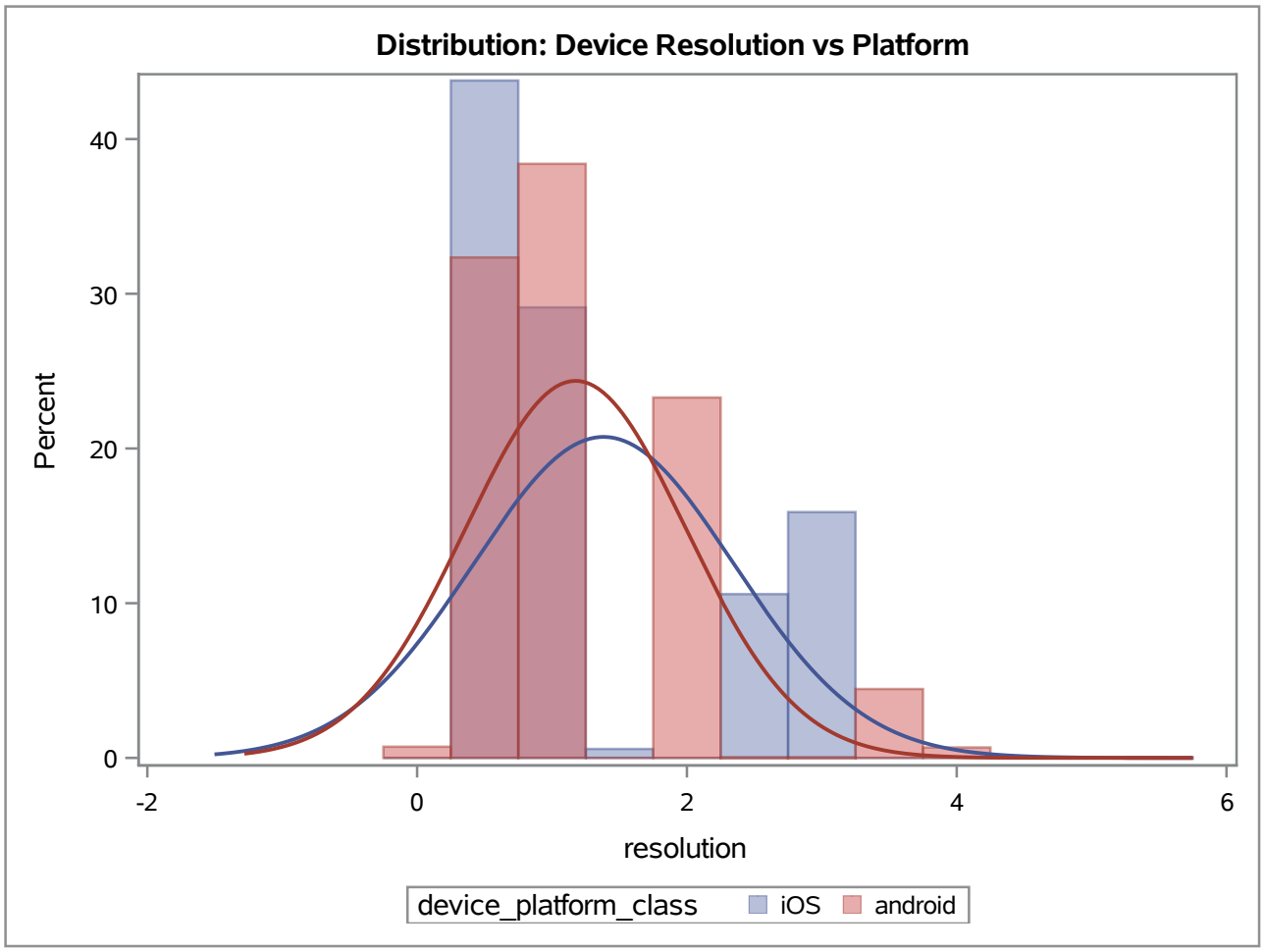
Table: Platform, Make & OS Version vs Install

			install	
			0	1
			N	N
device_platform_class	device_make_class	device_os_class		
iOS	8	10	396	12
	9	1	922	13
		2	1287	15
		3	93	1
		4	210	2
		5	229	3
		6	49	1
		7	77	1
		8	147	2
		9	60	.
		10	629	6
	10	1	544	3
		2	1211	21
		3	54	.
		4	172	1
		5	162	5
		6	35	.
		7	3006	18
		8	77	3
		9	77	1
		10	769	1


Distribution: Device Height vs Platform
Percent
30
20
10
0
0
1000
2000
3000
device_height
device_platform_class
iOS
android


Distribution: Device Width vs Platform
Percent
40
30
20
10
0
0
1000
2000
3000
device_width
device_platform_class
iOS
android


Distribution: Device Volume vs Platform
Percent
15
10
5
0
-0.5
0.0
0.5
1.0
1.5
device_volume
device_platform_class
iOS
android


Distribution: Device Resolution vs Platform
Percent
40
30
20
10
0
-2
0
2
4
6
resolution
device_platform_class
iOS
android

Correlation Matrix: Device Height, Width, Volume & Resolution

The CORR Procedure

4 Variables:	device_height device_width device_volume resolution

Simple Statistics						
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**
device_height	121339	1126	447.73521	136631037	320.00000	2732
device_width	121339	1174	484.02271	142449708	320.00000	2732
device_volume	121339	0.53488	0.30936	64902	0.01000	1.06000
resolution	121339	1.37863	0.95955	167282	0.15360	5.59514

Pearson Correlation Coefficients, N = 121339 Prob > |r| under H0: Rho=0				
	device_height	**device_width**	**device_volume**	**resolution**
device_height	1.00000	0.26162 <.0001	-0.01301 <.0001	0.76585 <.0001
device_width	0.26162 <.0001	1.00000	0.00199 0.4883	0.81404 <.0001
device_volume	-0.01301 <.0001	0.00199 0.4883	1.00000	-0.01071 0.0002
resolution	0.76585 <.0001	0.81404 <.0001	-0.01071 0.0002	1.00000

The SURVEYSELECT Procedure

Selection Method	Simple Random Sampling

Input Data Set	MOBILE_DUMMY
Random Number Seed	10
Sampling Rate	0.7
Sample Size	84938
Selection Probability	0.700006
Sampling Weight	0
Output Data Set	MOBILE_DUMMY

The REG Procedure
Model: MODEL1
Dependent Variable: install

Number of Observations Read	121339
Number of Observations Used	84938

Weight: Selected Selection Indicator

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	32	1.28190	0.04006	5.05	<.0001
Error	84905	673.27413	0.00793		
Corrected Total	84937	674.55603			

Root MSE	0.08905	**R-Square**	0.0019
Dependent Mean	0.00801	**Adj R-Sq**	0.0015
Coeff Var	1112.30131		

Note: Model is not full rank. Least-squares solutions for the parameters are not unique. Some statistics will be misleading. A reported DF of 0 or B means that the estimate is biased.

Note: The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

pubid_10 =	Intercept - pubid_1 - pubid_2 - pubid_3 - pubid_4 - pubid_5 - pubid_6 - pubid_7 - pubid_8 - pubid_9
os_10 =	Intercept - os_1 - os_2 - os_3 - os_4 - os_5 - os_6 - os_7 - os_8 - os_9
plat_android =	Intercept - plat_ios
make_10 =	Intercept - make_1 - make_2 - make_3 - make_4 - make_5 - make_6 - make_7 - make_8 - make_9

Parameter Estimates							
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**Variance Inflation**
Intercept	Intercept	B	0.00179	0.00285	0.63	0.5292	0
pubid_1	Publisher Id Class 1	B	0.01437	0.00911	1.58	0.1146	1.00365
pubid_2	Publisher Id Class 2	B	0.00189	0.00121	1.56	0.1186	1.19841
pubid_3	Publisher Id Class 3	B	0.00740	0.00123	6.00	<.0001	1.20818
pubid_4	Publisher Id Class 4	B	0.00019228	0.00127	0.15	0.8795	1.14841
pubid_5	Publisher Id Class 5	B	0.00089517	0.00142	0.63	0.5280	1.14157
pubid_6	Publisher Id Class 6	B	-0.00165	0.00160	-1.03	0.3008	1.11166
pubid_7	Publisher Id Class 7	B	-0.00395	0.00160	-2.47	0.0136	1.09782
pubid_8	Publisher Id Class 8	B	-0.00414	0.00167	-2.48	0.0131	1.13185
pubid_9	Publisher Id Class 9	B	-0.00104	0.00181	-0.57	0.5657	1.07976
pubid_10	Publisher Id Class 10	0	0	.	.	.	.
os_1	Device OS Class 1	B	0.00186	0.00108	1.72	0.0862	3.07268
os_2	Device OS Class 2	B	0.00127	0.00132	0.96	0.3367	2.02844

The REG Procedure
Model: MODEL1
Dependent Variable: install

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
os_3	Device OS Class 3	B	0.00037244	0.00141	0.26	0.7921	1.75671
os_4	Device OS Class 4	B	0.00267	0.00143	1.86	0.0624	1.77417
os_5	Device OS Class 5	B	0.00313	0.00177	1.77	0.0764	1.35252
os_6	Device OS Class 6	B	0.00570	0.00201	2.83	0.0046	1.27351
os_7	Device OS Class 7	B	-0.00358	0.00260	-1.38	0.1685	1.99525
os_8	Device OS Class 8	B	0.00226	0.00208	1.09	0.2751	1.23525
os_9	Device OS Class 9	B	-0.00177	0.00244	-0.72	0.4686	1.16176
os_10	Device OS Class 10	0	0	.	.	.	.
plat_ios	Device Platform Class iOS	B	0.00305	0.00309	0.99	0.3243	1.71208
plat_android	Device Platform Class Android	0	0	.	.	.	.
make_1	Device Make Class 1	B	-0.00594	0.00196	-3.03	0.0024	8.32308
make_2	Device Make Class 2	B	-0.00717	0.00198	-3.62	0.0003	6.95159
make_3	Device Make Class 3	B	-0.00582	0.00211	-2.76	0.0058	4.38254
make_4	Device Make Class 4	B	-0.00719	0.00229	-3.14	0.0017	4.25983
make_5	Device Make Class 5	B	-0.00556	0.00221	-2.51	0.0119	3.25729
make_6	Device Make Class 6	B	-0.00792	0.00218	-3.63	0.0003	3.04951
make_7	Device Make Class 7	B	-0.00016932	0.00225	-0.08	0.9401	3.04242
make_8	Device Make Class 8	B	-0.00763	0.00261	-2.92	0.0035	2.50083
make_9	Device Make Class 9	B	-0.00292	0.00265	-1.10	0.2694	2.26553
make_10	Device Make Class 10	0	0	.	.	.	.
wifi		1	0.00167	0.00069531	2.40	0.0162	1.12389
device_height		1	0.00000337	9.7487E-7	3.45	0.0006	2.04212
device_width		1	0.00000103	9.069923E-7	1.13	0.2565	2.06946
device_volume		1	0.00155	0.00100	1.55	0.1215	1.02869

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
			Proportion of Variation						
Number	Eigenvalue	Condition Index	pubid_1	pubid_2	pubid_3	pubid_4	pubid_5	pubid_6	pubid_7
1	2.74846	1.00000	5.41427E-16	4.73781E-15	1.30954E-14	2.56684E-15	7.70431E-15	3.07331E-15	1.41125E-14
2	2.17530	1.12405	1.1048E-13	6.51901E-14	1.82779E-14	1.31142E-14	4.37603E-14	6.95095E-15	4.06316E-17
3	1.94476	1.18881	3.06079E-14	7.7267E-14	1.31024E-13	1.77192E-13	1.51547E-14	2.69844E-13	2.2599E-14
4	1.62474	1.30063	2.19308E-13	3.45669E-13	2.22942E-13	1.49461E-13	4.83488E-13	2.08523E-13	5.7576E-15
5	1.58211	1.31803	8.38757E-14	2.94784E-14	2.76976E-14	1.19315E-14	7.89676E-14	1.55506E-14	2.46328E-13
6	1.38645	1.40797	1.52392E-14	2.37628E-14	7.87721E-13	6.15874E-15	3.34743E-14	4.03504E-13	1.51735E-15
7	1.33680	1.43387	3.90874E-14	3.21749E-15	4.64514E-20	3.15469E-16	1.01791E-13	4.5873E-16	1.42148E-13
8	1.31996	1.44300	4.52847E-14	1.0636E-14	1.19833E-12	2.81356E-15	1.22265E-13	2.85037E-13	2.08062E-13
9	1.26036	1.47672	4.51569E-13	8.63892E-15	3.78086E-14	3.11663E-14	2.50996E-13	3.45432E-14	1.72253E-12
10	1.20449	1.51058	7.47358E-13	2.97511E-13	4.88379E-13	1.95995E-13	1.18774E-13	4.99038E-17	2.83566E-12
11	1.17216	1.53127	1.35811E-14	4.28165E-13	8.5915E-14	8.08883E-15	2.41522E-13	2.75368E-13	1.7025E-15
12	1.13384	1.55693	2.09111E-13	4.35612E-13	2.63298E-14	2.64746E-12	4.56987E-15	5.40584E-13	1.76945E-14
13	1.10621	1.57626	1.16409E-12	2.24422E-15	2.4632E-14	1.29646E-13	2.79723E-13	8.56898E-14	2.23125E-13
14	1.08306	1.59301	5.37192E-14	1.1134E-12	1.27785E-16	1.86428E-12	9.29354E-14	5.49241E-15	1.81205E-13
15	1.07548	1.59862	7.56339E-12	1.99497E-12	7.97549E-14	3.15931E-13	4.12941E-12	1.16396E-13	2.29551E-13
16	1.04937	1.61838	2.67099E-13	2.36415E-14	3.06599E-16	1.69088E-13	9.83155E-14	9.11951E-13	7.20598E-15
17	1.03927	1.62623	1.01888E-11	9.20725E-13	1.16633E-14	3.88978E-14	3.25178E-13	1.67663E-12	6.89478E-13
18	1.03668	1.62825	9.89059E-13	1.63234E-14	9.35264E-14	1.31242E-13	3.93116E-13	1.37113E-12	1.24509E-12
19	1.02660	1.63623	5.91095E-11	9.68461E-15	1.18913E-13	9.62169E-15	6.15241E-13	5.62739E-13	2.2648E-12
20	1.01372	1.64659	1.23934E-11	3.86119E-14	9.38176E-15	2.36464E-13	2.2503E-14	3.08056E-13	4.57094E-13
21	0.99829	1.65926	2.53605E-10	1.13704E-13	3.54164E-14	3.69137E-13	8.50271E-13	1.14423E-12	9.87786E-13
22	0.99319	1.66352	2.15277E-10	1.54295E-13	2.41146E-15	4.75126E-13	9.03538E-13	2.82161E-12	6.45921E-14
23	0.98170	1.67323	2.10864E-11	1.36788E-13	3.20566E-14	2.31485E-13	1.81449E-15	6.67312E-13	2.96306E-13
24	0.93243	1.71687	3.79724E-12	1.24453E-15	7.62319E-14	6.26167E-13	7.52954E-15	9.92027E-13	2.79573E-13
25	0.91061	1.73731	4.5366E-13	2.90357E-14	7.0088E-13	6.1137E-16	2.28457E-13	1.19214E-12	4.66101E-13
26	0.84756	1.80077	3.17146E-15	4.41511E-14	1.04501E-12	3.60127E-14	5.17624E-14	2.87358E-14	2.05606E-13
27	0.80166	1.85161	1.86849E-12	3.22952E-13	1.47309E-12	9.41285E-15	8.12355E-13	3.93113E-13	5.40515E-14
28	0.76815	1.89156	1.81659E-14	2.04676E-15	4.29018E-13	2.52823E-14	1.83463E-15	1.23836E-13	4.44912E-14
29	0.55094	2.23353	6.99435E-15	1.4878E-15	1.10527E-14	9.78436E-15	5.13639E-14	8.05165E-14	1.49332E-14
30	0.37457	2.70880	8.07523E-13	6.55649E-13	6.59311E-13	6.92049E-13	1.04E-12	4.70543E-13	3.48244E-12
31	0.28666	3.09642	6.65735E-14	3.1964E-14	8.52622E-15	9.66604E-16	9.22623E-15	6.32096E-15	1.26331E-14
32	0.23438	3.42438	8.12243E-14	1.96418E-13	1.90035E-13	2.91695E-14	1.25206E-13	1.9644E-13	2.15112E-13
33	1E-12	1657848	0	0	0	0	0	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
	Proportion of Variation								
Number	pubid_8	pubid_9	pubid_10	os_1	os_2	os_3	os_4	os_5	os_6
1	2.79539E-14	1.50033E-14	1.12405E-14	4.35211E-14	1.80016E-16	6.92425E-15	6.51088E-15	3.76494E-15	3.37591E-15
2	7.12132E-14	3.19568E-14	2.74969E-14	2.69999E-16	1.07974E-17	3.11548E-14	3.36367E-14	2.00437E-15	7.23588E-16
3	1.84255E-13	4.76532E-14	1.89126E-13	2.17691E-13	6.39389E-13	7.50137E-15	1.15177E-18	8.08192E-14	6.10224E-14
4	7.18447E-13	3.88039E-16	2.58593E-13	1.32754E-14	9.77481E-14	1.42014E-14	2.3264E-15	2.48076E-14	1.04625E-13
5	1.40701E-12	9.29525E-14	2.64854E-13	7.15166E-14	3.92411E-13	6.44632E-15	1.1144E-14	5.3568E-16	6.8404E-14
6	1.15666E-14	3.34917E-14	7.58693E-15	4.14299E-13	2.14229E-13	2.42368E-13	2.26985E-12	5.04994E-15	5.9872E-13
7	2.9263E-15	2.84579E-13	4.37119E-15	6.63191E-14	4.30248E-14	4.00912E-15	5.99439E-14	4.21225E-14	1.21752E-13
8	8.07697E-14	9.80078E-13	9.04369E-16	3.04422E-13	2.89195E-14	1.12512E-12	5.48134E-13	5.27501E-13	4.84423E-13
9	8.6764E-15	2.17014E-13	5.23856E-14	5.23381E-14	8.05894E-14	5.21724E-13	1.11851E-15	6.20208E-14	6.42567E-15
10	7.53109E-15	2.42422E-12	1.04104E-13	3.01026E-15	2.53803E-13	4.9153E-14	2.44337E-14	8.40029E-14	1.19229E-13
11	4.55036E-14	1.19982E-13	3.66253E-14	3.06354E-14	9.3751E-14	3.68139E-14	4.25418E-13	1.2952E-12	1.32366E-12
12	5.19301E-14	6.78141E-13	2.76063E-14	2.88907E-16	4.80716E-16	1.21681E-12	1.03151E-14	1.35802E-13	2.80237E-14
13	2.99273E-15	1.69799E-12	1.04104E-14	1.56964E-15	3.92267E-14	9.18156E-14	1.38518E-14	9.65612E-17	2.11624E-13
14	1.61225E-15	2.35831E-15	4.95353E-16	2.83355E-14	2.75834E-15	1.17048E-13	1.26859E-14	1.47442E-14	4.3778E-13
15	1.06695E-14	8.46098E-13	2.59557E-15	1.40552E-15	6.17602E-14	2.38105E-14	2.07176E-15	1.28976E-13	2.11963E-16
16	1.77078E-14	1.13711E-13	2.87056E-17	5.55611E-15	2.78307E-14	1.9788E-12	4.97175E-15	7.40087E-12	3.88803E-12
17	1.95123E-13	8.16876E-13	2.53958E-15	6.08348E-15	4.13588E-14	8.40246E-15	1.70933E-14	4.48034E-14	6.25411E-14
18	7.56928E-14	9.72641E-13	6.29526E-18	1.68728E-14	6.3316E-15	1.56202E-13	3.12606E-15	3.23392E-12	8.17785E-13
19	5.09386E-14	2.77829E-12	3.81311E-16	5.06175E-15	1.04711E-14	1.34891E-13	4.23318E-14	1.32147E-12	2.95684E-12
20	7.08697E-15	4.66986E-13	1.17199E-15	2.22128E-16	4.62762E-16	2.26059E-14	1.59996E-14	1.61478E-13	5.81908E-13
21	8.27511E-14	1.7169E-12	7.19233E-17	5.19515E-16	1.26462E-16	4.70359E-16	1.83342E-15	3.09346E-15	2.37343E-13
22	7.72699E-15	6.33397E-13	2.27663E-16	1.6371E-17	8.77193E-14	2.07198E-13	1.94941E-14	7.89514E-14	1.29238E-13
23	9.8016E-13	1.81125E-13	1.95186E-15	1.92652E-15	1.77303E-13	2.89355E-13	4.08212E-14	2.79445E-13	9.2038E-12
24	1.16822E-12	1.21059E-12	2.72727E-14	1.09482E-16	2.37848E-13	5.68387E-14	2.32154E-14	3.63398E-13	9.38314E-13
25	5.43525E-12	1.3781E-12	4.46241E-16	1.76282E-15	4.67387E-14	1.4697E-13	7.65405E-13	1.79353E-13	1.26699E-12
26	1.97908E-12	5.64562E-14	3.3525E-15	1.54253E-14	3.18537E-13	6.649E-13	1.90249E-12	1.30673E-12	1.69772E-13
27	2.39289E-15	6.87969E-16	1.281E-14	6.69536E-15	5.61708E-13	2.66529E-14	1.09829E-12	1.87696E-15	1.21259E-13
28	3.40883E-12	1.34519E-13	7.32727E-15	5.98965E-14	2.87029E-13	7.07716E-14	2.75904E-13	2.88448E-13	1.44876E-14
29	9.41927E-14	4.07994E-14	2.78361E-16	2.05326E-13	2.58762E-12	3.56516E-13	4.8405E-13	1.94679E-13	5.06865E-13
30	1.3497E-12	3.37325E-12	1.18459E-13	7.30268E-18	3.84669E-14	1.04501E-14	2.59058E-17	1.95538E-14	3.31848E-14
31	7.32007E-14	5.66705E-14	3.8321E-15	1.04598E-13	1.39238E-13	1.62668E-13	1.09888E-13	2.51696E-14	9.14576E-14
32	3.65056E-14	3.76525E-13	3.60915E-14	6.55284E-14	1.24307E-13	9.21323E-14	1.52277E-13	1.00199E-14	2.56664E-13
33	0	0	0	0	0	0	0	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
	Proportion of Variation								
Number	os_7	os_8	os_9	os_10	plat_ios	plat_android	make_1	make_2	make_3
1	2.99519E-13	5.28491E-15	3.43391E-15	2.46042E-13	2.01756E-13	2.01756E-13	2.20609E-14	1.06935E-14	2.02336E-15
2	2.05248E-13	9.22716E-15	2.55298E-15	1.24462E-14	6.44593E-15	6.44593E-15	2.76426E-14	1.00827E-14	1.43379E-13
3	3.07447E-13	9.03538E-14	3.07576E-14	1.18934E-15	1.71778E-14	1.71778E-14	1.2569E-13	3.9519E-14	5.57116E-15
4	2.11394E-12	3.91707E-14	2.31565E-14	9.92441E-14	6.07161E-14	6.07161E-14	6.5056E-15	1.12198E-14	9.32195E-16
5	3.74302E-12	2.78848E-15	4.58577E-16	7.84561E-14	3.51586E-15	3.51586E-15	1.71142E-14	2.25939E-14	2.68667E-14
6	5.31429E-14	6.26092E-15	3.0729E-15	4.07611E-14	6.19481E-15	6.19481E-15	1.18549E-14	2.8592E-14	1.03966E-14
7	1.96457E-13	1.28213E-14	1.31703E-13	1.25614E-17	4.2087E-15	4.2087E-15	1.42504E-12	1.37837E-12	1.02246E-13
8	1.41161E-14	4.26748E-13	4.74287E-13	1.9545E-13	4.34944E-15	4.34944E-15	5.09171E-14	3.08155E-14	4.79168E-15
9	3.87342E-13	1.08763E-14	4.78728E-14	4.37087E-13	6.02405E-16	6.02405E-16	1.83943E-13	4.73027E-13	6.89593E-13
10	6.51311E-13	1.6475E-14	6.55948E-14	8.03051E-15	2.42148E-14	2.42148E-14	5.73181E-15	5.34092E-13	1.49937E-13
11	1.3607E-14	9.0984E-13	7.87331E-13	1.52545E-13	2.67097E-15	2.67097E-15	2.88094E-14	5.94351E-14	1.87347E-12
12	8.97609E-14	4.55706E-13	2.18095E-16	9.55358E-14	9.74745E-15	9.74745E-15	9.04263E-15	1.1332E-15	8.0449E-15
13	1.70492E-15	5.99994E-13	1.02304E-12	7.27585E-15	3.07768E-16	3.07768E-16	1.05377E-14	1.81031E-14	2.64002E-12
14	2.27514E-18	1.46916E-12	7.63986E-15	3.7056E-14	9.06503E-16	9.06503E-16	2.32195E-15	3.01617E-15	1.16267E-15
15	3.92828E-14	1.00045E-13	6.14228E-13	2.7401E-15	1.45709E-15	1.45709E-15	2.97047E-15	1.1869E-13	3.49109E-14
16	2.07254E-15	3.57229E-16	4.00543E-13	3.36131E-14	7.00537E-16	7.00537E-16	9.88688E-16	2.95092E-14	1.25646E-13
17	3.42795E-14	6.21347E-13	3.72605E-13	2.45009E-14	2.02139E-17	2.02139E-17	5.9338E-15	2.04972E-15	9.09689E-14
18	2.82341E-16	5.44958E-12	8.78128E-12	3.16093E-14	4.36771E-16	4.36771E-16	2.01034E-16	9.72369E-15	7.81422E-15
19	1.01864E-14	4.91191E-12	4.48112E-15	4.87314E-14	8.23593E-16	8.23593E-16	2.45533E-15	1.0287E-16	7.56867E-16
20	9.38537E-17	5.37389E-12	2.30837E-11	1.52421E-14	9.57147E-16	9.57147E-16	1.1264E-15	3.10608E-16	2.58E-13
21	7.67293E-14	6.30781E-13	7.94973E-16	1.14101E-15	6.90762E-16	6.90762E-16	2.98938E-15	3.56059E-14	4.23101E-15
22	8.75078E-14	6.88383E-14	1.24694E-12	4.09632E-14	3.0051E-15	3.0051E-15	8.30551E-15	4.25058E-14	1.93978E-14
23	9.00671E-14	3.82685E-12	2.6735E-13	4.81285E-13	5.25085E-15	5.25085E-15	4.0443E-14	4.26817E-14	1.48741E-13
24	6.80379E-13	6.48741E-14	2.7778E-13	1.58392E-16	8.647E-15	8.647E-15	9.2985E-14	7.03358E-14	7.24714E-16
25	1.23405E-12	2.33565E-13	8.29712E-14	4.52131E-13	1.71829E-16	1.71829E-16	1.34768E-17	5.16212E-15	1.39002E-13
26	3.43665E-13	1.07366E-12	2.00894E-12	6.9887E-14	3.30486E-16	3.30486E-16	4.86666E-15	1.79893E-14	9.85954E-14
27	9.57858E-14	5.53029E-14	3.47576E-14	1.28695E-13	6.63979E-18	6.63979E-18	1.26865E-14	8.1778E-14	1.03819E-17
28	1.8008E-12	3.25851E-13	5.21696E-13	2.98696E-12	1.25305E-13	1.25305E-13	6.64926E-14	5.72423E-15	6.90932E-15
29	1.42079E-12	1.7261E-13	3.63225E-14	3.27272E-13	2.71155E-14	2.71155E-14	2.29641E-13	1.59866E-13	1.69662E-14
30	2.3106E-13	2.13525E-14	3.2785E-14	5.36541E-15	9.40649E-15	9.40649E-15	1.23964E-15	4.72043E-16	7.47152E-15
31	2.49739E-11	5.99477E-14	2.54198E-14	1.74704E-14	2.81669E-13	2.81669E-13	1.17303E-13	1.11642E-13	5.23696E-15
32	8.44493E-12	2.69862E-15	4.63155E-16	7.57286E-15	4.72314E-14	4.72314E-14	3.80361E-13	3.29144E-13	2.23147E-12
33	0	0	0	0	1.00000	1.00000	0	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
	Proportion of Variation								
Number	make_4	make_5	make_6	make_7	make_8	make_9	make_10	wifi	device_height
1	1.51665E-14	6.70291E-16	9.28553E-15	1.0244E-16	1.85206E-14	4.28829E-15	9.81913E-13	0.00066925	0.00078775
2	8.4428E-13	1.19947E-13	6.21381E-14	4.45153E-15	7.28694E-13	7.2677E-13	1.13515E-14	0.01651	0.05133
3	7.14392E-14	6.51687E-16	1.17822E-12	2.42595E-14	2.52007E-14	2.79367E-13	3.62253E-14	0.00810	0.00511
4	1.97298E-14	2.11348E-15	2.0529E-13	1.96759E-15	1.14563E-14	2.79503E-14	1.46094E-13	0.03620	0.01965
5	1.69978E-13	8.12467E-15	1.04713E-12	6.60021E-14	7.55128E-14	8.34732E-15	8.10959E-13	2.925808E-8	0.00483
6	3.74436E-14	2.30544E-15	3.02292E-13	1.40777E-12	2.64056E-15	1.0599E-13	1.64609E-16	0.00069989	0.00011759
7	4.41595E-17	7.11372E-14	1.10076E-13	1.54609E-14	4.01737E-14	2.19239E-15	1.73376E-14	0.00084172	0.00176
8	1.45576E-13	2.88054E-15	2.72553E-14	3.25158E-14	1.27236E-13	1.34193E-14	4.53404E-14	0.04600	0.01893
9	2.49322E-14	1.07794E-12	3.39584E-15	1.4518E-12	2.96523E-14	6.79062E-15	1.77333E-13	0.01218	0.00274
10	2.09213E-14	2.8332E-14	1.53598E-13	6.56221E-13	2.23233E-13	9.36518E-16	3.33049E-14	0.00144	0.01060
11	4.07321E-13	1.65708E-13	7.93381E-14	2.1506E-12	1.83152E-15	7.19206E-13	6.12427E-16	0.00025086	0.00178
12	3.73339E-13	2.01301E-13	1.09962E-13	4.1102E-13	6.06463E-13	6.53165E-13	2.43454E-16	0.03295	0.00119
13	1.79841E-13	4.48882E-12	7.04962E-15	8.27005E-14	1.08935E-13	9.11282E-13	1.18307E-14	0.00009500	0.00097014
14	1.44441E-12	4.83624E-13	1.48225E-13	3.28692E-13	4.76284E-12	1.89784E-12	1.06519E-15	0.00405	0.00085511
15	2.38026E-13	5.41137E-13	1.24653E-13	1.82465E-14	3.51095E-13	2.66454E-12	4.95516E-15	0.00532	0.00014542
16	1.87681E-13	3.03366E-13	1.57543E-16	1.27912E-13	3.43544E-13	2.07162E-14	3.54044E-15	0.00465	1.162096E-7
17	1.72194E-13	4.34478E-14	4.36806E-13	1.20232E-13	6.47882E-12	6.25606E-12	1.08681E-14	0.00196	0.00004042
18	2.54647E-14	9.222E-14	3.57439E-14	5.35282E-14	2.11712E-13	1.18651E-12	4.15994E-15	0.00016323	0.00014278
19	5.67199E-15	3.44325E-13	1.51268E-13	5.81789E-14	9.5001E-13	1.10741E-12	6.95383E-15	0.00173	0.00129
20	8.66678E-16	8.36377E-13	1.83497E-15	1.05294E-16	1.23358E-15	1.30551E-16	9.86331E-17	0.00007444	0.00000676
21	3.92583E-13	8.39325E-13	2.34052E-16	1.08774E-14	1.48788E-12	5.98127E-17	1.59678E-14	0.02045	0.00008858
22	5.65959E-13	8.0086E-14	9.9303E-14	1.40029E-14	5.84553E-14	2.86687E-12	4.3498E-15	0.02162	0.00108
23	1.44471E-13	5.19553E-13	1.44959E-13	1.26408E-13	1.60641E-13	7.81069E-13	1.15472E-13	0.01087	0.00075448
24	1.50938E-13	4.80045E-13	2.95134E-14	1.88485E-13	1.74939E-12	2.33922E-14	1.62224E-13	0.03779	0.00039963
25	3.04107E-14	1.16554E-13	7.24377E-15	4.19044E-13	6.78365E-13	4.00213E-13	5.63233E-13	0.00019593	0.00012406
26	1.77726E-13	8.8757E-14	1.46519E-13	1.79759E-12	3.23123E-14	9.50279E-14	5.30715E-14	0.16577	0.00404
27	2.93737E-13	1.10004E-14	7.89451E-14	4.33335E-13	6.48442E-16	6.02862E-13	1.62525E-13	0.41188	0.00153
28	4.89277E-14	1.79126E-14	1.35213E-14	3.36494E-12	3.64543E-14	7.34151E-14	6.8878E-14	0.00000389	0.00000522
29	3.03057E-15	1.97121E-15	1.07366E-11	2.74997E-13	3.75288E-14	1.36783E-12	1.87647E-13	0.13997	0.00903
30	4.27893E-14	5.82941E-16	5.68069E-14	1.25997E-16	1.00558E-13	3.96939E-14	5.47092E-15	0.00596	0.41842
31	2.04064E-12	1.40263E-14	5.41128E-13	2.30867E-13	2.352E-12	1.22606E-12	2.07515E-11	0.00057285	0.05976
32	8.00095E-12	2.03841E-12	3.53795E-13	1.14036E-13	7.80176E-12	9.90231E-12	2.29357E-12	0.01105	0.38249
33	0	0	0	0	0	0	0	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)		
	Proportion of Variation	
Number	device_width	device_volume
1	0.00140	0.00006476
2	0.05377	0.00089895
3	0.00351	0.00140
4	0.02572	0.00295
5	0.00102	0.00549
6	0.00066189	0.00029432
7	0.00043506	0.01229
8	0.00008263	0.01296
9	0.01056	0.01496
10	0.01157	0.04548
11	0.00095515	0.01721
12	0.00000304	0.12565
13	0.00013555	0.00151
14	0.00019477	0.02376
15	0.00086870	0.00206
16	0.00001680	0.00312
17	0.00043542	0.00292
18	0.00016377	0.00013259
19	9.655882E-8	0.00005507
20	0.00001917	0.00153
21	0.00010251	0.01193
22	0.00005444	0.00091433
23	0.00056938	0.00933
24	0.00533	0.39584
25	0.00004903	0.10036
26	0.00090194	0.04282
27	0.00022572	0.13273
28	0.00017448	0.02357
29	0.00173	0.00009207
30	0.45665	0.00531
31	0.04503	0.00055112
32	0.37765	0.00183
33	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
			Proportion of Variation						
Number	Eigenvalue	Condition Index	pubid_1	pubid_2	pubid_3	pubid_4	pubid_5	pubid_6	pubid_7
34	1E-12	1657848	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
35	1E-12	1657848	0	0	0	0	0	0	0
36	1E-12	1657848	0	0	0	0	0	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
	Proportion of Variation								
Number	pubid_8	pubid_9	pubid_10	os_1	os_2	os_3	os_4	os_5	os_6
34	1.00000	1.00000	1.00000	0	0	0	0	0	0
35	0	0	0	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
36	0	0	0	0	0	0	0	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
	Proportion of Variation								
Number	os_7	os_8	os_9	os_10	plat_ios	plat_android	make_1	make_2	make_3
34	0	0	0	0	0	0	0	0	0
35	1.00000	1.00000	1.00000	1.00000	0	0	0	0	0
36	0	0	0	0	0	0	1.00000	1.00000	1.00000

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)									
	Proportion of Variation								
Number	make_4	make_5	make_6	make_7	make_8	make_9	make_10	wifi	device_height
34	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0
36	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0	0

The REG Procedure
Model: MODEL1
Dependent Variable: install

Collinearity Diagnostics (intercept adjusted)		
	Proportion of Variation	
Number	device_width	device_volume
34	0	0
35	0	2.29851E-13
36	0	2.69901E-13

Note: Singularities or near singularities caused grossly large variance calculations. To provide diagnostics, eigenvalues are inflated to a minimum of 1e-12.

The LOGISTIC Procedure

Model Information	
Data Set	WORK.MOBILE_LIN_PREDICT_1
Response Variable	install
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	36401
Number of Observations Used	36401

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	36073
2	1	328

Probability modeled is install='1'.

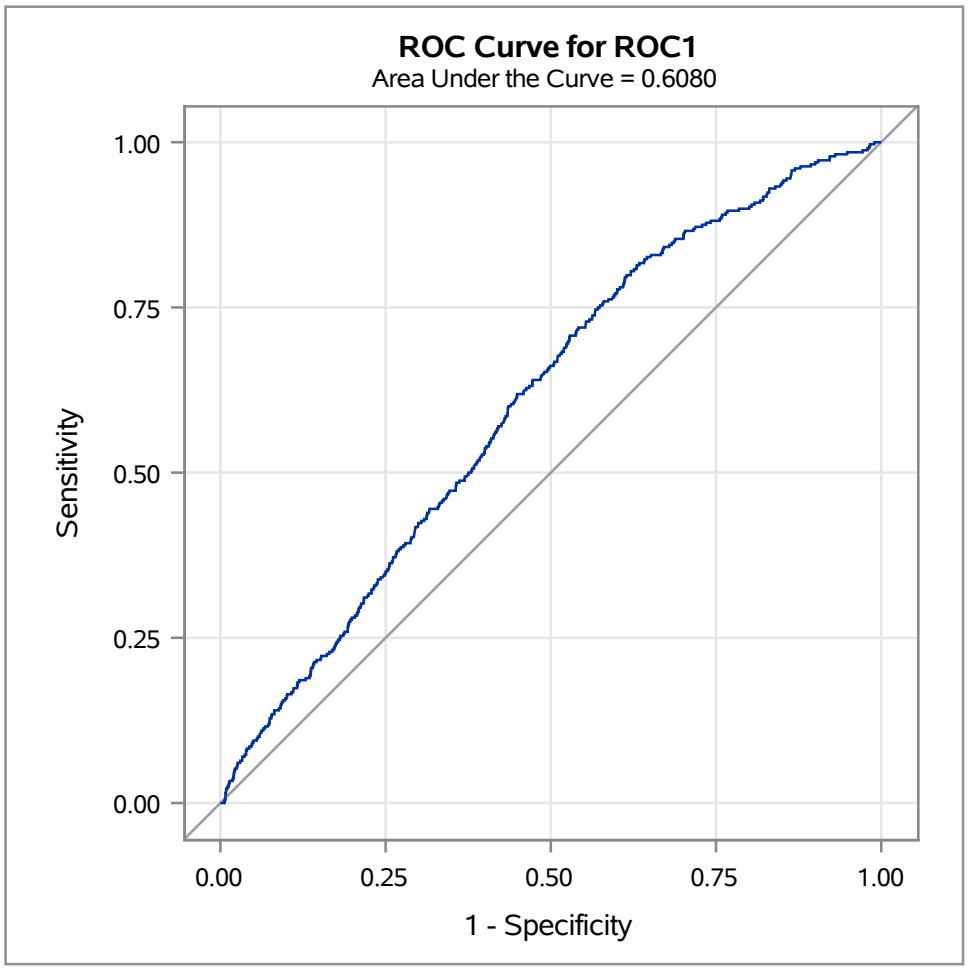
Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
8.6208	3	0.0348

ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	lin_pred	Predicted Value of install

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics							
	Mann-Whitney						
ROC Model	Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
ROC1	0.6080	0.0144	0.5797	0.6362	0.2160	0.2160	0.00386

Model 2: Stepwise Linear Regression with SBC Selection and best Validation model

The GLMSELECT Procedure

Data Set	WORK.MOBILE_DUMMY_TRAIN
Test Data Set	WORK.MOBILE_DUMMY_TEST
Dependent Variable	install
Selection Method	Stepwise
Select Criterion	SBC
Stop Criterion	None
Choose Criterion	Validation ASE
Effect Hierarchy Enforced	Single
Random Number Seed	10

Observation Profile for Analysis Data	
Number of Observations Read	84938
Number of Observations Used	84938
Number of Observations Used for Training	76482
Number of Observations Used for Validation	8456

Observation Profile for Test Data	
Number of Observations Read	36401
Number of Observations Used	36401

Dimensions	
Number of Effects	37
Number of Parameters	37

Model 2: Stepwise Linear Regression with SBC Selection and best Validation model

The GLMSELECT Procedure

Stepwise Selection Summary							
Step	Effect Entered	Effect Removed	Number Effects In	SBC	ASE	Validation ASE	Test ASE
0	Intercept		1	-370237.12	0.0079	0.0083	0.0089
1	pubid_3		2	-370270.60	0.0079	0.0083	0.0089
2	device_height		3	-370280.37	0.0079	0.0083	0.0089
3	make_7		4	-370282.13*	0.0079	0.0083*	0.0089
* Optimal Value of Criterion							

Selection stopped as adding or dropping any effect does not improve the selection criterion.

Model 2: Stepwise Linear Regression with SBC Selection and best Validation model

The GLMSELECT Procedure
Selected Model

The selected model, based on Validation ASE, is the model at Step 3.

Effects:	Intercept pubid_3 make_7 device_height

Analysis of Variance				
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**
Model	3	0.62173	0.20724	26.26
Error	76478	603.52901	0.00789	
Corrected Total	76481	604.15074		

Root MSE	0.08883
Dependent Mean	0.00796
R-Square	0.0010
Adj R-Sq	0.0010
AIC	-293835
AICC	-293835
SBC	-370282
ASE (Train)	0.00789
ASE (Validate)	0.00831
ASE (Test)	0.00892

Model 2: Stepwise Linear Regression with SBC Selection and best Validation model

The GLMSELECT Procedure
Selected Model

Parameter Estimates				
Parameter	**DF**	**Estimate**	**Standard Error**	**t Value**
Intercept	1	0.003317	0.000892	3.72
pubid_3	1	0.008490	0.001187	7.15
make_7	1	0.004894	0.001357	3.61
device_height	1	0.000003257	0.000000722	4.51

Model 2: Stepwise Linear Regression with SBC Selection and best Validation model

The REG Procedure
Model: MODEL1
Dependent Variable: install

Number of Observations Read	121339
Number of Observations Used	84938

Weight: Selected Selection Indicator

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	3	0.72873	0.24291	30.62	<.0001
Error	84934	673.82730	0.00793		
Corrected Total	84937	674.55603			

Root MSE	0.08907	**R-Square**	0.0011
Dependent Mean	0.00801	**Adj R-Sq**	0.0010
Coeff Var	1112.56817		

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	1	0.00330	0.00084889	3.88	0.0001
device_height		1	0.00000327	6.871533E-7	4.76	<.0001
pubid_3	Publisher Id Class 3	1	0.00824	0.00113	7.29	<.0001
make_7	Device Make Class 7	1	0.00606	0.00129	4.69	<.0001

Model 2: Stepwise Linear Regression with SBC Selection and best Validation model

The LOGISTIC Procedure

Model Information	
Data Set	WORK.MOBILE_LIN_PREDICT_2
Response Variable	install
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	36401
Number of Observations Used	36401

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	36073
2	1	328

Probability modeled is install='1'.

Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
42.1526	3	<.0001

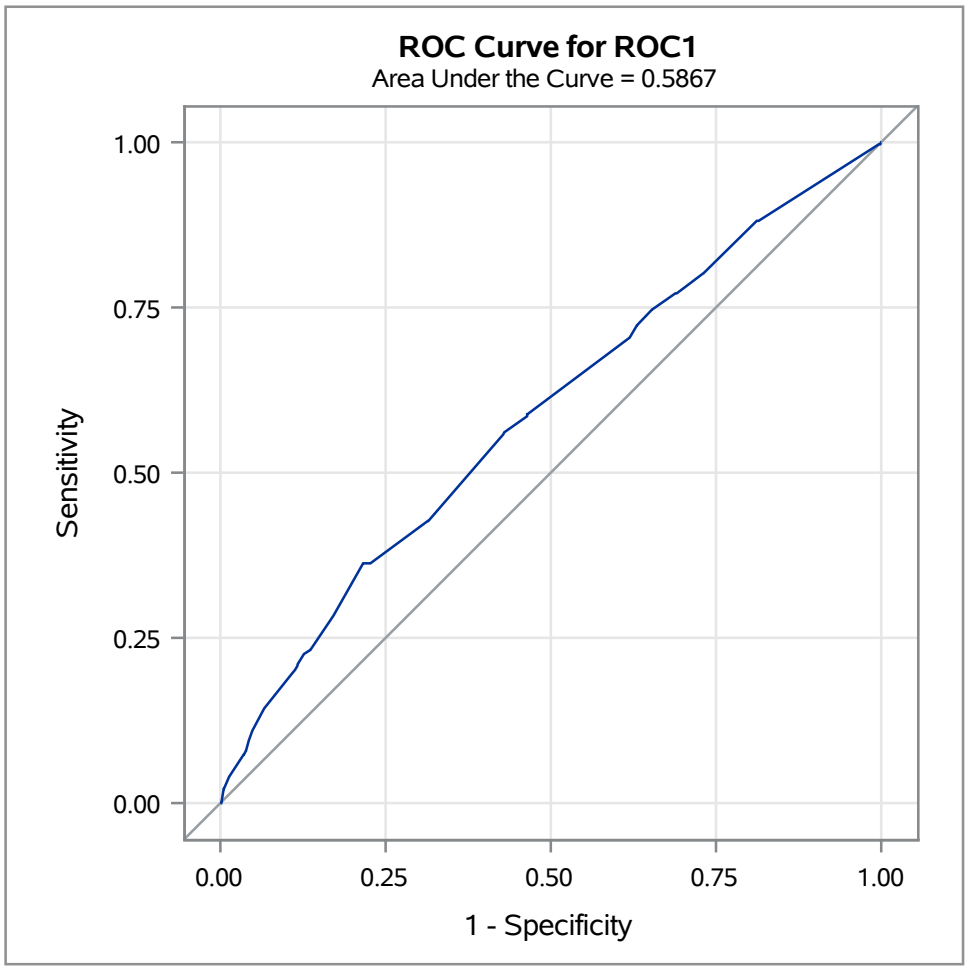
ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	lin_pred	Predicted Value of install

Model 2: Stepwise Linear Regression with SBC Selection and best Validation model

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics							
	Mann-Whitney						
ROC Model	Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
ROC1	0.5867	0.0163	0.5548	0.6186	0.1734	0.1882	0.00310

Model 3: Lasso Linear Regression with best Validation model

The GLMSELECT Procedure

Data Set	WORK.MOBILE_DUMMY_TRAIN
Test Data Set	WORK.MOBILE_DUMMY_TEST
Dependent Variable	install
Selection Method	LASSO
Stop Criterion	None
Choose Criterion	Validation ASE
Effect Hierarchy Enforced	None
Random Number Seed	10

Observation Profile for Analysis Data	
Number of Observations Read	84938
Number of Observations Used	84938
Number of Observations Used for Training	76482
Number of Observations Used for Validation	8456

Observation Profile for Test Data	
Number of Observations Read	36401
Number of Observations Used	36401

Dimensions	
Number of Effects	37
Number of Parameters	37

Model 3: Lasso Linear Regression with best Validation model

The GLMSELECT Procedure

LASSO Selection Summary						
Step	Effect Entered	Effect Removed	Number Effects In	ASE	Validation ASE	Test ASE
0	Intercept		1	0.0079	0.0083	0.0089
1	pubid_3		2	0.0079	0.0083	0.0089
2	device_height		3	0.0079	0.0083	0.0089
3	device_width		4	0.0079	0.0083	0.0089
4	make_7		5	0.0079	0.0083	0.0089
5	make_6		6	0.0079	0.0083	0.0089
6	wifi		7	0.0079	0.0083	0.0089
7	os_6		8	0.0079	0.0083	0.0089
8	pubid_8		9	0.0079	0.0083	0.0089
9	make_2		10	0.0079	0.0083	0.0089
10	pubid_7		11	0.0079	0.0083	0.0089
11	make_10		12	0.0079	0.0083	0.0089
12	os_4		13	0.0079	0.0083	0.0089
13	os_9		14	0.0079	0.0083	0.0089
14	device_volume		15	0.0079	0.0083	0.0089
15	pubid_1		16	0.0079	0.0083	0.0089
16	os_3		17	0.0079	0.0083	0.0089
17	make_9		18	0.0079	0.0083	0.0089
18	os_10		19	0.0079	0.0083	0.0089
19	pubid_6		20	0.0079	0.0083	0.0089
20	os_5		21	0.0079	0.0083	0.0089
21	os_7		22	0.0079	0.0083	0.0089
22	pubid_2		23	0.0079	0.0083	0.0089
23	pubid_5		24	0.0079	0.0083	0.0089
24	make_8		25	0.0079	0.0083	0.0089
25	plat_ios		26	0.0079	0.0083	0.0089
26	pubid_4		27	0.0079	0.0083	0.0089
27	os_2		28	0.0079	0.0083	0.0089
28	make_3		29	0.0079	0.0083	0.0089
29	pubid_9		30	0.0079	0.0083	0.0089
30	make_4		31	0.0079	0.0083	0.0089
31	os_8		32	0.0079	0.0083	0.0089
32	make_5		33	0.0079	0.0083*	0.0089
* Optimal Value of Criterion						

Model 3: Lasso Linear Regression with best Validation model

The GLMSELECT Procedure

Selection stopped because the change of the maximum absolute correction is tiny.

Model 3: Lasso Linear Regression with best Validation model

The GLMSELECT Procedure
Selected Model

The selected model, based on Validation ASE, is the model at Step 32.

Effects:	Intercept pubid_1 pubid_2 pubid_3 pubid_4 pubid_5 pubid_6 pubid_7 pubid_8 pubid_9 os_2 os_3 os_4 os_5 os_6 os_7 os_8 os_9 os_10 plat_ios make_2 make_3 make_4 make_5 make_6 make_7 make_8 make_9 make_10 wifi device_height device_width device_volume

Analysis of Variance				
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**
Model	32	1.11798	0.03494	4.43
Error	76449	603.03276	0.00789	
Corrected Total	76481	604.15074		

Root MSE	0.08881
Dependent Mean	0.00796
R-Square	0.0019
Adj R-Sq	0.0014
AIC	-293840
AICC	-293840
SBC	-370019
ASE (Train)	0.00788
ASE (Validate)	0.00831
ASE (Test)	0.00892

Model 3: Lasso Linear Regression with best Validation model

The GLMSELECT Procedure
Selected Model

Parameter Estimates		
Parameter	**DF**	**Estimate**
Intercept	1	-0.003099
pubid_1	1	0.016062
pubid_2	1	0.001307
pubid_3	1	0.007721
pubid_4	1	0.000990
pubid_5	1	0.001162
pubid_6	1	-0.001255
pubid_7	1	-0.003616
pubid_8	1	-0.003740
pubid_9	1	-0.000643
os_2	1	-0.000458
os_3	1	-0.001554
os_4	1	0.000992
os_5	1	0.001367
os_6	1	0.004137
os_7	1	-0.004451
os_8	1	0.000374
os_9	1	-0.003918
os_10	1	-0.001743
plat_ios	1	0.003397
make_2	1	-0.001276
make_3	1	0.000504
make_4	1	-0.000968
make_5	1	0.000201
make_6	1	-0.002926
make_7	1	0.004557
make_8	1	-0.001826
make_9	1	0.001534
make_10	1	0.005473
wifi	1	0.001805
device_height	1	0.000003314
device_width	1	0.000001078
device_volume	1	0.002161

The LOGISTIC Procedure

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

Number of Observations Read	84938
Number of Observations Used	84938

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	84258
2	1	680

Probability modeled is install='1'.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	7922.056	7837.434
SC	7931.405	8145.973
-2 Log L	7920.056	7771.434

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	148.6219	32	<.0001
Score	161.4131	32	<.0001
Wald	154.1520	32	<.0001

Note: The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

pubid_10 =	1 * Intercept - pubid_1 - pubid_2 - pubid_3 - pubid_4 - pubid_5 - pubid_6 - pubid_7 - pubid_8 - pubid_9
os_10 =	1 * Intercept - os_1 - os_2 - os_3 - os_4 - os_5 - os_6 - 1 * os_7 - os_8 - os_9
plat_android =	Intercept - plat_ios
make_10 =	1 * Intercept - 1 * make_1 - 1 * make_2 - 1 * make_3 - make_4 - 1 * make_5 - 1 * make_6 - 1 * make_7 - make_8 - make_9

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-5.5289	0.3523	246.2236	<.0001
pubid_1	1	1.1484	0.7204	2.5412	0.1109
pubid_2	1	0.2273	0.1520	2.2356	0.1349
pubid_3	1	0.6756	0.1257	28.8905	<.0001
pubid_4	1	0.0147	0.1708	0.0074	0.9313
pubid_5	1	0.1159	0.1839	0.3971	0.5286
pubid_6	1	-0.3135	0.2487	1.5894	0.2074
pubid_7	1	-0.6109	0.2530	5.8285	0.0158
pubid_8	1	-0.8217	0.3141	6.8416	0.0089
pubid_9	1	-0.1203	0.2357	0.2604	0.6099
pubid_10	0	0	.	.	.
os_1	1	0.2330	0.1449	2.5853	0.1079
os_2	1	0.1818	0.1783	1.0389	0.3081
os_3	1	0.0163	0.1979	0.0068	0.9343
os_4	1	0.3041	0.1750	3.0188	0.0823
os_5	1	0.3972	0.2215	3.2160	0.0729
os_6	1	0.5845	0.2197	7.0755	0.0078
os_7	1	-0.3154	0.3457	0.8325	0.3616
os_8	1	0.2960	0.2659	1.2387	0.2657
os_9	1	-0.4377	0.4301	1.0355	0.3089
os_10	0	0	.	.	.
plat_ios	1	0.2007	0.3654	0.3017	0.5828
plat_android	0	0	.	.	.
make_1	1	-0.5456	0.2047	7.1046	0.0077
make_2	1	-0.7196	0.2112	11.6022	0.0007
make_3	1	-0.5697	0.2386	5.7007	0.0170
make_4	1	-0.6516	0.2309	7.9647	0.0048
make_5	1	-0.5357	0.2550	4.4147	0.0356
make_6	1	-0.9792	0.2809	12.1522	0.0005
make_7	1	0.00313	0.2253	0.0002	0.9889
make_8	1	-0.6950	0.2718	6.5368	0.0106
make_9	1	-0.2870	0.2558	1.2588	0.2619
make_10	0	0	.	.	.
wifi	1	0.2304	0.0927	6.1797	0.0129
device_height	1	0.000365	0.000113	10.3995	0.0013

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
device_width	1	0.000082	0.000108	0.5737	0.4488
device_volume	1	0.2026	0.1258	2.5951	0.1072

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
pubid_1	3.153	0.768	12.941
pubid_2	1.255	0.932	1.691
pubid_3	1.965	1.536	2.514
pubid_4	1.015	0.726	1.418
pubid_5	1.123	0.783	1.610
pubid_6	0.731	0.449	1.190
pubid_7	0.543	0.331	0.891
pubid_8	0.440	0.238	0.814
pubid_9	0.887	0.559	1.407
os_1	1.262	0.950	1.677
os_2	1.199	0.846	1.701
os_3	1.016	0.690	1.498
os_4	1.355	0.962	1.910
os_5	1.488	0.964	2.296
os_6	1.794	1.166	2.760
os_7	0.730	0.371	1.436
os_8	1.344	0.798	2.264
os_9	0.646	0.278	1.500
plat_ios	1.222	0.597	2.502
make_1	0.579	0.388	0.866
make_2	0.487	0.322	0.737
make_3	0.566	0.354	0.903
make_4	0.521	0.331	0.819
make_5	0.585	0.355	0.965
make_6	0.376	0.217	0.651
make_7	1.003	0.645	1.560
make_8	0.499	0.293	0.850
make_9	0.751	0.455	1.239
wifi	1.259	1.050	1.510

The LOGISTIC Procedure

Odds Ratio Estimates			
Effect	**Point Estimate**	**95% Wald Confidence Limits**	
device_height	1.000	1.000	1.001
device_width	1.000	1.000	1.000
device_volume	1.225	0.957	1.567

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	63.0	**Somers' D**	0.260
Percent Discordant	37.0	**Gamma**	0.260
Percent Tied	0.0	**Tau-a**	0.004
Pairs	57295440	**c**	0.630

The LOGISTIC Procedure

Model Information		
Data Set	WORK.MOBILE_LOG_PREDICT_1	Posterior Probabilities for DATA=WORK.MOBILE_DUMMY_TEST.
Response Variable	install	
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	36401
Number of Observations Used	36401

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	36073
2	1	328

Probability modeled is install='1'.

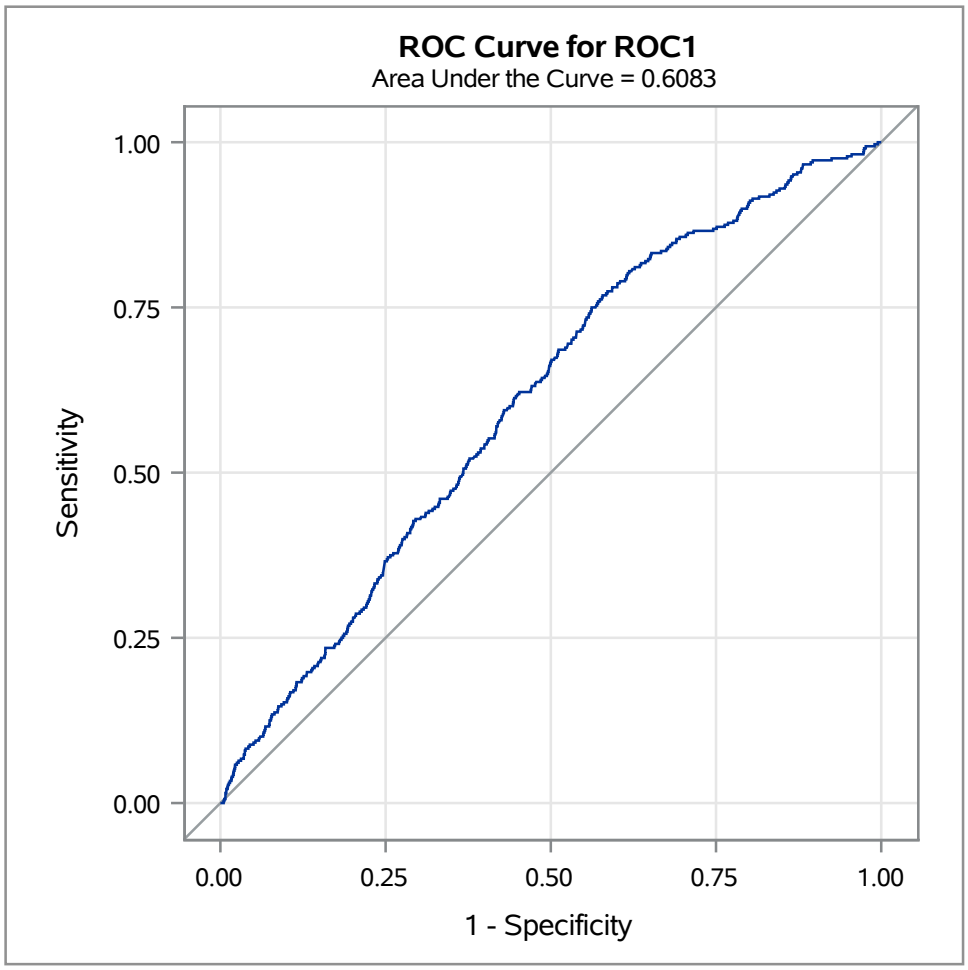
Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
8.6208	3	0.0348

ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	P_1	Predicted Probability: install=1

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics							
	Mann-Whitney						
ROC Model	Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
ROC1	0.6083	0.0145	0.5798	0.6367	0.2165	0.2166	0.00387

Model 2: Stepwise Logistic Regression with SBC Selection and best Validation model

The HPLOGISTIC Procedure

Performance Information	
Execution Mode	Single-Machine
Number of Threads	4

Data Access Information			
Data	**Engine**	**Role**	**Path**
WORK.MOBILE_DUMMY_TRAIN	V9	Input	On Client

Model Information	
Data Source	WORK.MOBILE_DUMMY_TRAIN
Response Variable	install
Distribution	Binary
Link Function	Logit
Optimization Technique	Newton-Raphson with Ridging
Seed	10

Number of Observations			
Description	**Total**	**Training**	**Validation**
Number of Observations Read	84938	76447	8491
Number of Observations Used	84938	76447	8491

Response Profile				
Ordered Value	**install**	**Total Frequency**	**Training**	**Validation**
1	0	84258	75830	8428
2	1	680	617	63

You are modeling the probability that install='1'.

Selection Information	
Selection Method	Stepwise
Select Criterion	SBC
Stop Criterion	None
Choose Criterion	Validation ASE
Effect Hierarchy Enforced	None

Model 2: Stepwise Logistic Regression with SBC Selection and best Validation model

The HPLOGISTIC Procedure

Selection Summary				
Step	Effect Entered	Number Effects In	SBC	Validation ASE
0	Intercept	1	7187.49	0.007365
1	pubid_3	2	7161.17	0.007357
2	device_height	3	7154.14	0.007357
3	make_7	4	7146.02*	0.007357*

*** Optimal Value of Criterion**

Stepwise selection stopped because adding or removing an effect does not improve the SBC criterion.

The model at step 3 is selected where Validation ASE is 0.007357.

Selected Effects:	Intercept pubid_3 make_7 device_height

Convergence criterion (GCONV=1E-8) satisfied.

Dimensions	
Columns in X	4
Number of Effects	4
Max Effect Columns	1
Rank of Cross-product Matrix	4
Parameters in Optimization	4

Fit Statistics		
Description	Training	Validation
-2 Log Likelihood	7104.43	736.97
AIC (smaller is better)	7112.43	744.97
AICC (smaller is better)	7112.43	744.97
BIC (smaller is better)	7149.40	773.15

Partition Fit Statistics		
Statistic	Training	Validation
Area under the ROCC	0.5901	0.5656
Average Square Error	0.007997	0.007357
Hosmer-Lemeshow Test	0.007590	0.1692
Misclassification Error	0.008071	0.007420
R-Square	0.000939	0.000756

Model 2: Stepwise Logistic Regression with SBC Selection and best Validation model

The HPLOGISTIC Procedure

Partition Fit Statistics		
Statistic	**Training**	**Validation**
Max-rescaled R-Square	0.01048	0.009017
McFadden's R-Square	0.01001	0.008637
Mean Difference	0.001088	0.001156
Somers' D	0.1803	0.1312
True Negative Fraction	1.0000	1.0000
True Positive Fraction	0	0

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	71.8225	3	<.0001

Parameter Estimates					
Parameter	**Estimate**	**Standard Error**	**DF**	**t Value**	**Pr > |t|**
Intercept	-5.4343	0.1150	Infty	-47.27	<.0001
pubid_3	0.7736	0.1160	Infty	6.67	<.0001
make_7	0.5940	0.1330	Infty	4.47	<.0001
device_height	0.000421	0.000086	Infty	4.92	<.0001

Model 2: Stepwise Logistic Regression with SBC Selection and best Validation model

The LOGISTIC Procedure

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

Number of Observations Read	84938
Number of Observations Used	84938

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	84258
2	1	680

Probability modeled is install='1'.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	7922.056	7849.160
SC	7931.405	7886.559
-2 Log L	7920.056	7841.160

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	78.8959	3	<.0001
Score	91.7596	3	<.0001
Wald	88.5682	3	<.0001

Model 2: Stepwise Logistic Regression with SBC Selection and best Validation model

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-5.4132	0.1095	2446.0121	<.0001
pubid_3	1	0.7982	0.1093	53.3142	<.0001
make_7	1	0.5875	0.1271	21.3546	<.0001
device_height	1	0.000394	0.000082	23.1585	<.0001

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
pubid_3	2.221	1.793	2.752
make_7	1.799	1.403	2.309
device_height	1.000	1.000	1.001

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	54.7	Somers' D	0.174
Percent Discordant	37.3	Gamma	0.189
Percent Tied	7.9	Tau-a	0.003
Pairs	57295440	c	0.587

Model 2: Stepwise Logistic Regression with SBC Selection and best Validation model

The LOGISTIC Procedure

Model Information		
Data Set	WORK.MOBILE_LOG_PREDICT_2	Posterior Probabilities for DATA=WORK.MOBILE_DUMMY_TEST.
Response Variable	install	
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	36401
Number of Observations Used	36401

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	36073
2	1	328

Probability modeled is install='1'.

Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
42.1526	3	<.0001

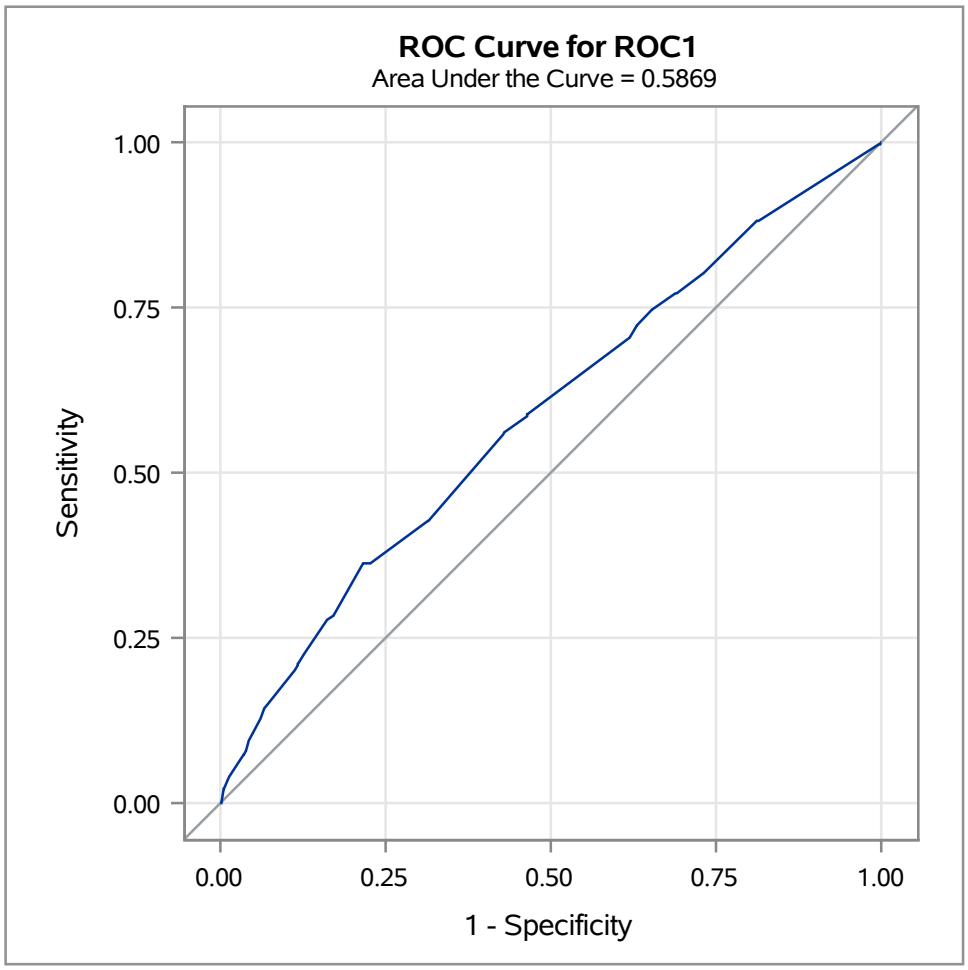
ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	P_1	Predicted Probability: install=1

Model 2: Stepwise Logistic Regression with SBC Selection and best Validation model

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics							
	Mann-Whitney						
ROC Model	Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
ROC1	0.5869	0.0163	0.5549	0.6188	0.1737	0.1886	0.00310

The FREQ Procedure

install	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	120331	99.17	120331	99.17
1	1008	0.83	121339	100.00

The FREQ Procedure

install	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	8620	89.53	8620	89.53
1	1008	10.47	9628	100.00

70-30 Split for Train and Test Sets (Over-Sampled Dataset)

The SURVEYSELECT Procedure

Selection Method	Simple Random Sampling

Input Data Set	MOBILE_DUMMY_SUB
Random Number Seed	10
Sampling Rate	0.7
Sample Size	6740
Selection Probability	0.700042
Sampling Weight	0
Output Data Set	MOBILE_DUMMY_SUB

The REG Procedure
Model: MODEL1
Dependent Variable: install

Number of Observations Read	9628
Number of Observations Used	6740

Weight: Selected Selection Indicator

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	32	12.30720	0.38460	4.27	<.0001
Error	6707	603.87143	0.09004		
Corrected Total	6739	616.17864			

Root MSE	0.30006	**R-Square**	0.0200
Dependent Mean	0.10178	**Adj R-Sq**	0.0153
Coeff Var	294.81113		

Note: Model is not full rank. Least-squares solutions for the parameters are not unique. Some statistics will be misleading. A reported DF of 0 or B means that the estimate is biased.

Note: The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

pubid_10 =	Intercept - pubid_1 - pubid_2 - pubid_3 - pubid_4 - pubid_5 - pubid_6 - pubid_7 - pubid_8 - pubid_9
os_10 =	Intercept - os_1 - os_2 - os_3 - os_4 - os_5 - os_6 - os_7 - os_8 - os_9
plat_android =	Intercept - plat_ios
make_10 =	Intercept - make_1 - make_2 - make_3 - make_4 - make_5 - make_6 - make_7 - make_8 - make_9

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	B	0.01165	0.03460	0.34	0.7364
pubid_1	Publisher Id Class 1	B	0.18518	0.10650	1.74	0.0821
pubid_2	Publisher Id Class 2	B	0.02938	0.01480	1.98	0.0472
pubid_3	Publisher Id Class 3	B	0.08119	0.01452	5.59	<.0001
pubid_4	Publisher Id Class 4	B	-0.00337	0.01533	-0.22	0.8263
pubid_5	Publisher Id Class 5	B	0.00971	0.01684	0.58	0.5643
pubid_6	Publisher Id Class 6	B	-0.03589	0.01990	-1.80	0.0713
pubid_7	Publisher Id Class 7	B	-0.04873	0.01924	-2.53	0.0114
pubid_8	Publisher Id Class 8	B	-0.04110	0.02040	-2.02	0.0439
pubid_9	Publisher Id Class 9	B	-0.03015	0.02106	-1.43	0.1523
pubid_10	Publisher Id Class 10	0	0	.	.	.
os_1	Device OS Class 1	B	0.02749	0.01321	2.08	0.0375
os_2	Device OS Class 2	B	0.02024	0.01597	1.27	0.2050

The REG Procedure
Model: MODEL1
Dependent Variable: install

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
os_3	Device OS Class 3	B	0.00917	0.01722	0.53	0.5945
os_4	Device OS Class 4	B	0.03539	0.01681	2.11	0.0353
os_5	Device OS Class 5	B	0.03932	0.02113	1.86	0.0628
os_6	Device OS Class 6	B	0.04178	0.02351	1.78	0.0756
os_7	Device OS Class 7	B	-0.01089	0.03202	-0.34	0.7339
os_8	Device OS Class 8	B	0.02717	0.02399	1.13	0.2574
os_9	Device OS Class 9	B	0.00831	0.03210	0.26	0.7956
os_10	Device OS Class 10	0	0	.	.	.
plat_ios	Device Platform Class iOS	B	0.02567	0.03763	0.68	0.4952
plat_android	Device Platform Class Android	0	0	.	.	.
make_1	Device Make Class 1	B	-0.04793	0.02372	-2.02	0.0434
make_2	Device Make Class 2	B	-0.06171	0.02393	-2.58	0.0099
make_3	Device Make Class 3	B	-0.03110	0.02556	-1.22	0.2238
make_4	Device Make Class 4	B	-0.07187	0.02795	-2.57	0.0102
make_5	Device Make Class 5	B	-0.03714	0.02643	-1.41	0.1600
make_6	Device Make Class 6	B	-0.06565	0.02625	-2.50	0.0124
make_7	Device Make Class 7	B	0.01147	0.02673	0.43	0.6680
make_8	Device Make Class 8	B	-0.03408	0.03193	-1.07	0.2859
make_9	Device Make Class 9	B	-0.05939	0.03152	-1.88	0.0596
make_10	Device Make Class 10	0	0	.	.	.
wifi		1	0.02585	0.00830	3.11	0.0019
device_height		1	0.00004475	0.00001169	3.83	0.0001
device_width		1	0.00000660	0.00001069	0.62	0.5369
device_volume		1	0.01326	0.01198	1.11	0.2682

The LOGISTIC Procedure

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

Number of Observations Read	2888
Number of Observations Used	2888

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	2566
2	1	322

Probability modeled is install='1'.

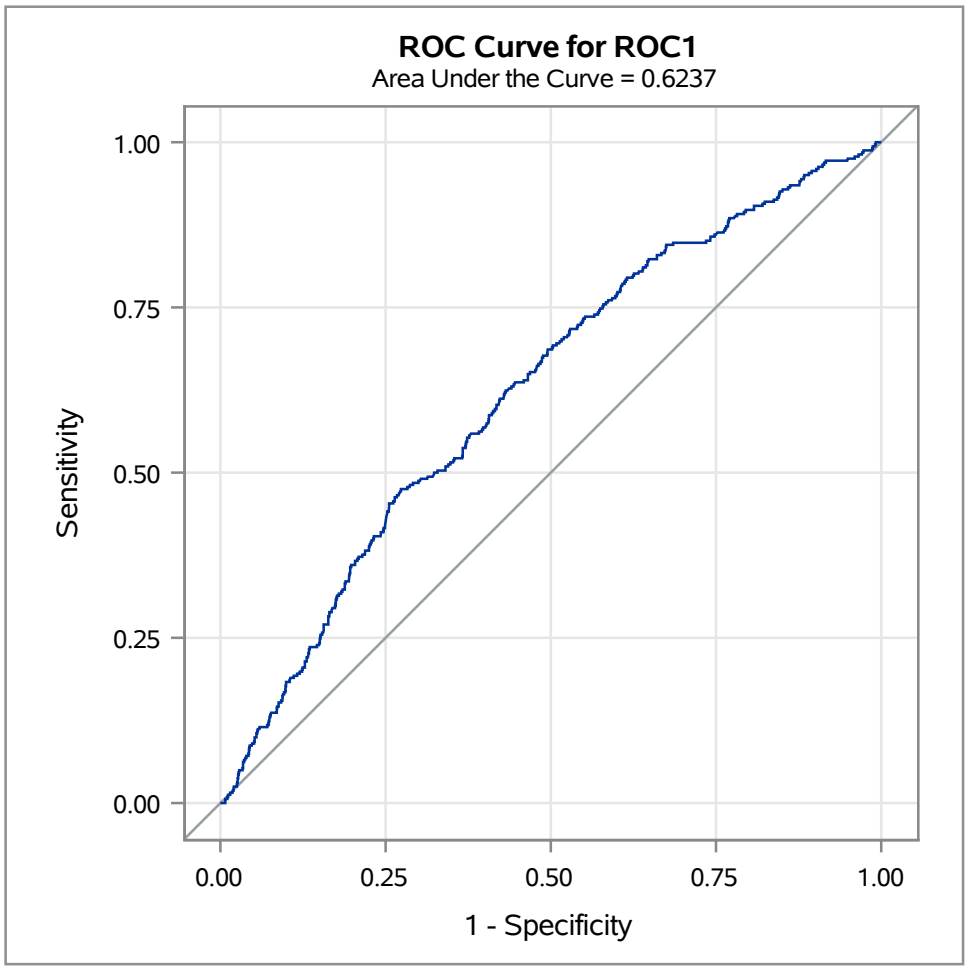
Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
15.9129	3	0.0012

ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	mobile_lin_predict	Predicted Value of install

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics							
	Mann-Whitney						
ROC Model	Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
ROC1	0.6237	0.0162	0.5920	0.6555	0.2474	0.2475	0.0490

The LOGISTIC Procedure

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

Number of Observations Read	6740
Number of Observations Used	6740

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	6054
2	1	686

Probability modeled is install='1'.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	4436.616	4370.576
SC	4443.432	4595.498
-2 Log L	4434.616	4304.576

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	130.0398	32	<.0001
Score	134.6209	32	<.0001
Wald	127.9436	32	<.0001

Note: The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

pubid_10 =	Intercept - pubid_1 - pubid_2 - pubid_3 - pubid_4 - pubid_5 - pubid_6 - pubid_7 - pubid_8 - pubid_9
os_10 =	Intercept - os_1 - os_2 - os_3 - os_4 - os_5 - os_6 - os_7 - os_8 - os_9
plat_android =	Intercept - plat_ios
make_10 =	Intercept - make_1 - make_2 - make_3 - make_4 - make_5 - make_6 - make_7 - make_8 - make_9

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-3.1648	0.3982	63.1808	<.0001
pubid_1	1	1.4978	0.8286	3.2673	0.0707
pubid_2	1	0.3169	0.1609	3.8799	0.0489
pubid_3	1	0.7082	0.1373	26.6111	<.0001
pubid_4	1	-0.0609	0.1859	0.1071	0.7435
pubid_5	1	0.1014	0.1936	0.2741	0.6006
pubid_6	1	-0.6508	0.3073	4.4859	0.0342
pubid_7	1	-0.6250	0.2556	5.9800	0.0145
pubid_8	1	-0.5817	0.2828	4.2314	0.0397
pubid_9	1	-0.3402	0.2522	1.8190	0.1774
pubid_10	0	0	.	.	.
os_1	1	0.3264	0.1577	4.2827	0.0385
os_2	1	0.2675	0.1930	1.9205	0.1658
os_3	1	0.0975	0.2106	0.2143	0.6434
os_4	1	0.3855	0.1862	4.2884	0.0384
os_5	1	0.4612	0.2388	3.7309	0.0534
os_6	1	0.4442	0.2491	3.1796	0.0746
os_7	1	-0.0172	0.3667	0.0022	0.9626
os_8	1	0.3377	0.2784	1.4712	0.2252
os_9	1	0.0942	0.3984	0.0560	0.8130
os_10	0	0	.	.	.
plat_ios	1	0.1771	0.4206	0.1772	0.6738
plat_android	0	0	.	.	.
make_1	1	-0.4304	0.2376	3.2808	0.0701
make_2	1	-0.6023	0.2432	6.1351	0.0133
make_3	1	-0.2499	0.2635	0.8996	0.3429
make_4	1	-0.6577	0.2743	5.7487	0.0165
make_5	1	-0.3202	0.2783	1.3237	0.2499
make_6	1	-0.7311	0.2971	6.0556	0.0139
make_7	1	0.1221	0.2601	0.2203	0.6388
make_8	1	-0.3297	0.3020	1.1914	0.2751
make_9	1	-0.5429	0.3103	3.0608	0.0802
make_10	0	0	.	.	.
wifi	1	0.3123	0.0976	10.2314	0.0014
device_height	1	0.000454	0.000122	13.9267	0.0002

The LOGISTIC Procedure

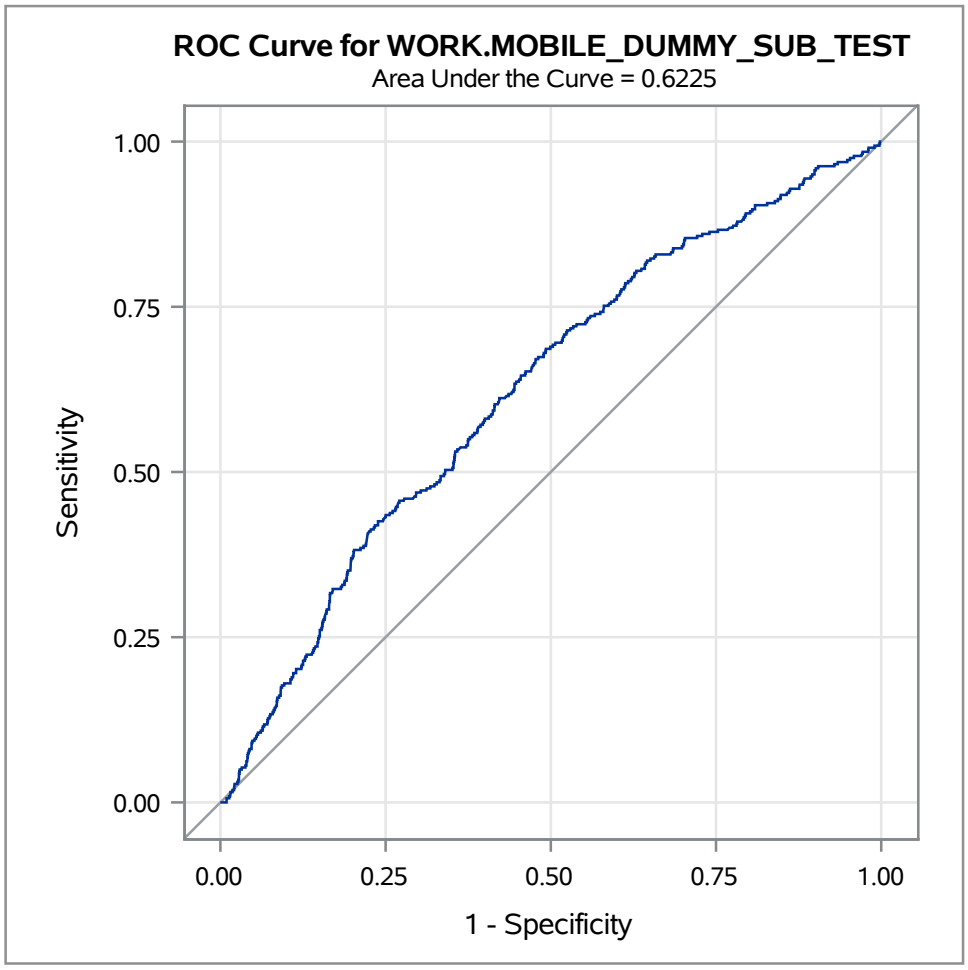
Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
device_width	1	0.000055	0.000115	0.2317	0.6303
device_volume	1	0.1554	0.1329	1.3677	0.2422

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
pubid_1	4.472	0.881	22.690
pubid_2	1.373	1.002	1.882
pubid_3	2.030	1.551	2.657
pubid_4	0.941	0.654	1.355
pubid_5	1.107	0.757	1.617
pubid_6	0.522	0.286	0.953
pubid_7	0.535	0.324	0.883
pubid_8	0.559	0.321	0.973
pubid_9	0.712	0.434	1.167
os_1	1.386	1.017	1.888
os_2	1.307	0.895	1.908
os_3	1.102	0.730	1.666
os_4	1.470	1.021	2.118
os_5	1.586	0.993	2.533
os_6	1.559	0.957	2.541
os_7	0.983	0.479	2.017
os_8	1.402	0.812	2.419
os_9	1.099	0.503	2.399
plat_ios	1.194	0.523	2.722
make_1	0.650	0.408	1.036
make_2	0.548	0.340	0.882
make_3	0.779	0.465	1.305
make_4	0.518	0.303	0.887
make_5	0.726	0.421	1.253
make_6	0.481	0.269	0.862
make_7	1.130	0.679	1.881
make_8	0.719	0.398	1.300
make_9	0.581	0.316	1.067
wifi	1.367	1.129	1.655

The LOGISTIC Procedure

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
device_height	1.000	1.000	1.001
device_width	1.000	1.000	1.000
device_volume	1.168	0.900	1.516

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	62.9	Somers' D	0.259
Percent Discordant	37.1	Gamma	0.259
Percent Tied	0.0	Tau-a	0.047
Pairs	4153044	c	0.629



The LOGISTIC Procedure

Model Information		
Data Set	WORK.MOBILE_LOG_UNADJ_TEST	Posterior Probabilities for DATA=WORK.MOBILE_DUMMY_SUB_TEST.
Response Variable	install	
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	2888
Number of Observations Used	2888

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	2566
2	1	322

Probability modeled is install='1'.

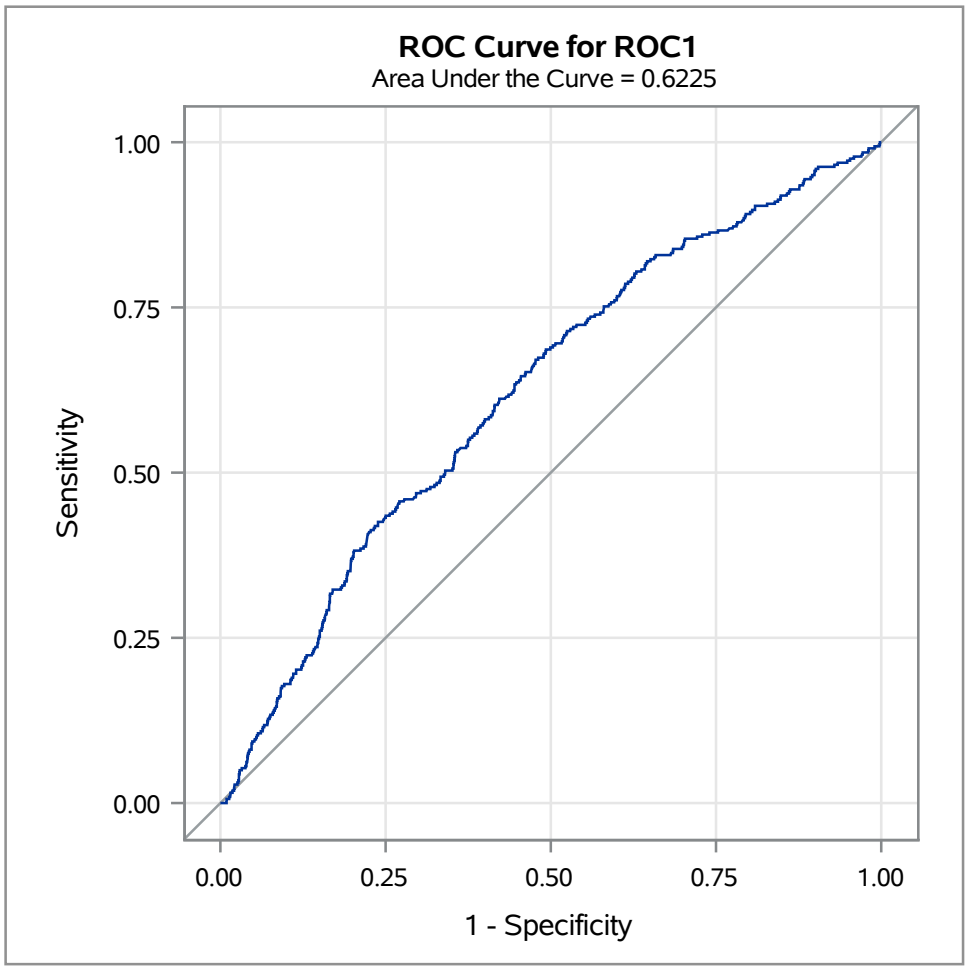
Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
24.2998	4	<.0001

ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	P_1	Predicted Probability: install=1

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics

ROC Model	Mann-Whitney				Somers' D	Gamma	Tau-a
	Area	Standard Error	95% Wald Confidence Limits				
ROC1	0.6225	0.0163	0.5905	0.6545	0.2450	0.2451	0.0486

Final Model 3: Logistic Regression (Weight-Adjusted)

The LOGISTIC Procedure

Model Information		
Data Set	WORK.MOBILE_LOG_UNADJ_TRAIN	Predicted Values and Diagnostic Statistics
Response Variable	install	
Number of Response Levels	2	
Weight Variable	w	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	6740
Number of Observations Used	6740
Sum of Weights Read	6760.198
Sum of Weights Used	6760.198

Response Profile			
Ordered Value	**install**	**Total Frequency**	**Total Weight**
1	0	6054	6705.7653
2	1	686	54.4327

Probability modeled is install='1'.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	635.358	687.875
SC	642.173	912.797
-2 Log L	633.358	621.875

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	11.4828	32	0.9997
Score	12.2545	32	0.9994
Wald	11.7506	32	0.9996

Note: The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

Final Model 3: Logistic Regression (Weight-Adjusted)

The LOGISTIC Procedure

pubid_10 =	Intercept - pubid_1 - pubid_2 - pubid_3 - pubid_4 - pubid_5 - pubid_6 - pubid_7 - pubid_8 - pubid_9
os_10 =	Intercept - os_1 - os_2 - os_3 - os_4 - os_5 - os_6 - os_7 - os_8 - os_9
plat_android =	Intercept - plat_ios
make_10 =	Intercept - make_1 - make_2 - make_3 - make_4 - make_5 - make_6 - make_7 - make_8 - make_9

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-5.7617	1.3434	18.3943	<.0001
pubid_1	1	1.4990	2.5709	0.3400	0.5599
pubid_2	1	0.3030	0.5393	0.3157	0.5742
pubid_3	1	0.6978	0.4477	2.4287	0.1191
pubid_4	1	-0.0619	0.6313	0.0096	0.9219
pubid_5	1	0.0929	0.6533	0.0202	0.8870
pubid_6	1	-0.6621	1.0625	0.3884	0.5331
pubid_7	1	-0.6400	0.8746	0.5355	0.4643
pubid_8	1	-0.5848	0.9689	0.3643	0.5461
pubid_9	1	-0.3353	0.8544	0.1540	0.6947
pubid_10	0	0	.	.	.
os_1	1	0.3305	0.5330	0.3844	0.5352
os_2	1	0.2668	0.6510	0.1680	0.6819
os_3	1	0.1012	0.7142	0.0201	0.8873
os_4	1	0.3795	0.6225	0.3716	0.5421
os_5	1	0.4567	0.8021	0.3241	0.5691
os_6	1	0.4546	0.8283	0.3012	0.5832
os_7	1	-0.0147	1.2281	0.0001	0.9904
os_8	1	0.3599	0.9387	0.1470	0.7014
os_9	1	0.1054	1.3543	0.0061	0.9380
os_10	0	0	.	.	.
plat_ios	1	0.1688	1.4097	0.0143	0.9047
plat_android	0	0	.	.	.
make_1	1	-0.4136	0.7750	0.2847	0.5936
make_2	1	-0.5885	0.7953	0.5476	0.4593
make_3	1	-0.2486	0.8702	0.0816	0.7751
make_4	1	-0.6248	0.8829	0.5008	0.4792
make_5	1	-0.3159	0.9229	0.1172	0.7321
make_6	1	-0.7118	1.0011	0.5055	0.4771

Final Model 3: Logistic Regression (Weight-Adjusted)

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
make_7	1	0.1498	0.8432	0.0315	0.8590
make_8	1	-0.2888	0.9681	0.0890	0.7655
make_9	1	-0.4886	1.0062	0.2358	0.6272
make_10	0	0	.	.	.
wifi	1	0.3170	0.3296	0.9250	0.3362
device_height	1	0.000436	0.000402	1.1783	0.2777
device_width	1	0.000036	0.000388	0.0086	0.9259
device_volume	1	0.1425	0.4435	0.1032	0.7480

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
pubid_1	4.477	0.029	690.771
pubid_2	1.354	0.471	3.896
pubid_3	2.009	0.835	4.832
pubid_4	0.940	0.273	3.240
pubid_5	1.097	0.305	3.948
pubid_6	0.516	0.064	4.138
pubid_7	0.527	0.095	2.928
pubid_8	0.557	0.083	3.722
pubid_9	0.715	0.134	3.816
os_1	1.392	0.490	3.956
os_2	1.306	0.365	4.677
os_3	1.106	0.273	4.486
os_4	1.462	0.431	4.951
os_5	1.579	0.328	7.604
os_6	1.575	0.311	7.988
os_7	0.985	0.089	10.939
os_8	1.433	0.228	9.022
os_9	1.111	0.078	15.796
plat_ios	1.184	0.075	18.760
make_1	0.661	0.145	3.021
make_2	0.555	0.117	2.639
make_3	0.780	0.142	4.293
make_4	0.535	0.095	3.021

Final Model 3: Logistic Regression (Weight-Adjusted)

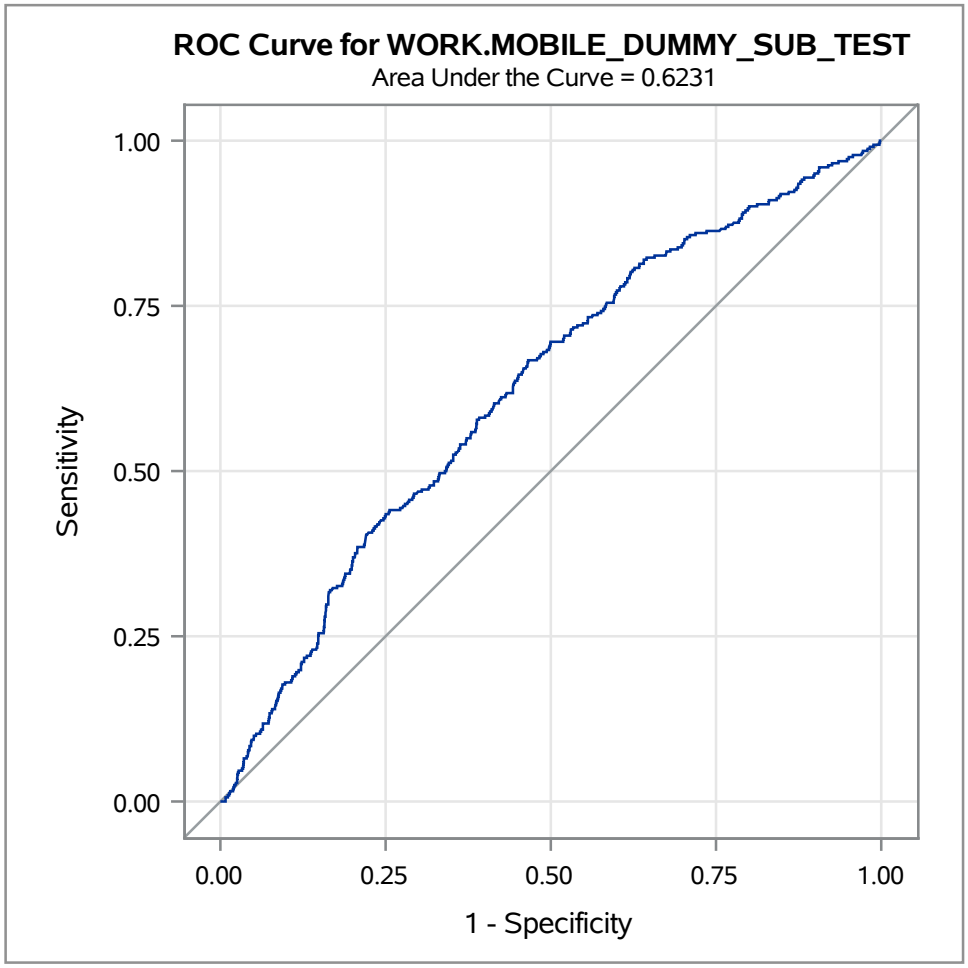
The LOGISTIC Procedure

Odds Ratio Estimates			
Effect	**Point Estimate**	**95% Wald Confidence Limits**	
make_5	0.729	0.119	4.450
make_6	0.491	0.069	3.491
make_7	1.162	0.222	6.064
make_8	0.749	0.112	4.996
make_9	0.613	0.085	4.408
wifi	1.373	0.720	2.619
device_height	1.000	1.000	1.001
device_width	1.000	0.999	1.001
device_volume	1.153	0.484	2.750

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	62.9	**Somers' D**	0.258
Percent Discordant	37.1	**Gamma**	0.258
Percent Tied	0.0	**Tau-a**	0.047
Pairs	4153044	**c**	0.629

Final Model 3: Logistic Regression (Weight-Adjusted)

The LOGISTIC Procedure



Final Model 3: Logistic Regression (Weight-Adjusted)

The LOGISTIC Procedure

Model Information		
Data Set	WORK.MOBILE_LOG_WEIGHT_TEST	Posterior Probabilities for DATA=WORK.MOBILE_DUMMY_SUB_TEST.
Response Variable	install	
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	2888
Number of Observations Used	2888

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	2566
2	1	322

Probability modeled is install='1'.

Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
24.2998	4	<.0001

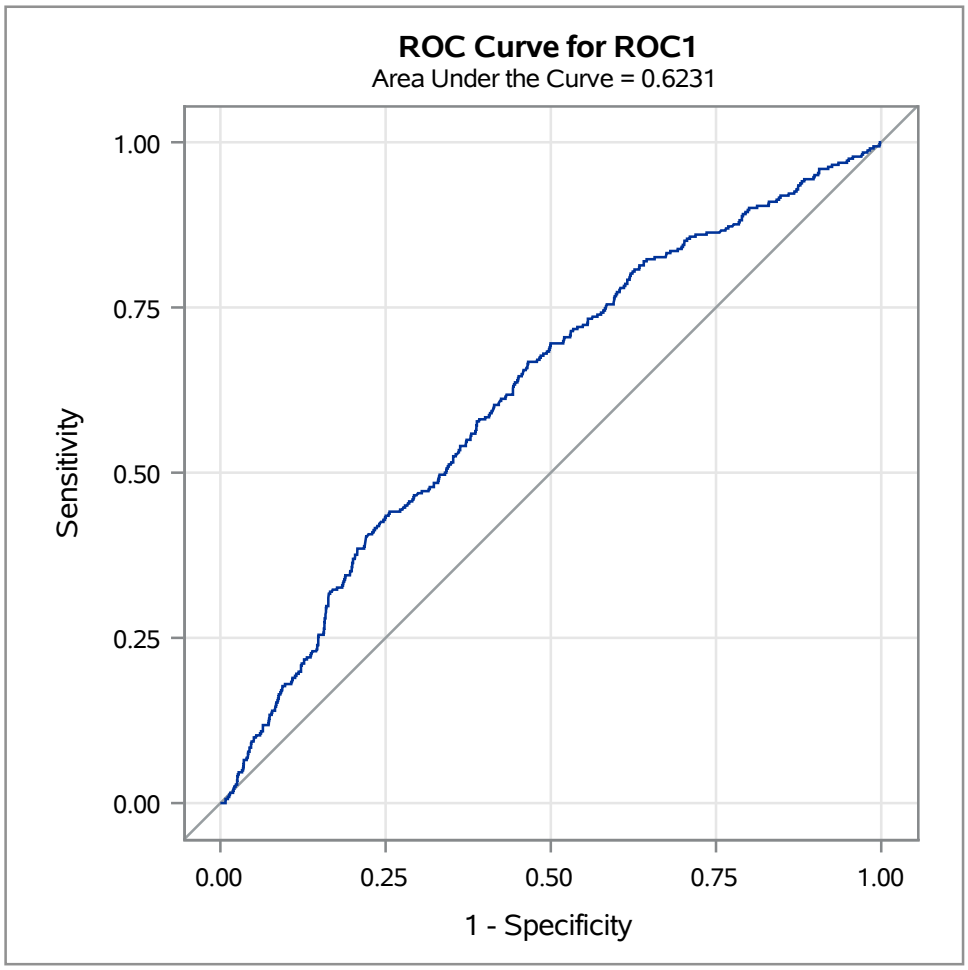
ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	P_1	Predicted Probability: install=1

Final Model 3: Logistic Regression (Weight-Adjusted)

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics							
	Mann-Whitney						
ROC Model	Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
ROC1	0.6231	0.0163	0.5911	0.6550	0.2461	0.2462	0.0488

Final Model 4: Logistic Regression (Offset-Adjusted)

The LOGISTIC Procedure

Model Information		
Data Set	WORK.MOBILE_LOG_UNADJ_TRAIN	Predicted Values and Diagnostic Statistics
Response Variable	install	
Number of Response Levels	2	
Offset Variable	off	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	6740
Number of Observations Used	6740

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	6054
2	1	686

Probability modeled is install='1'.

Intercept-Only Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	4436.616	4370.576
SC	4443.432	4595.498
-2 Log L	4434.616	4304.576

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	130.0398	32	<.0001
Score	134.6209	32	<.0001
Wald	127.9410	32	<.0001

Note: The following parameters have been set to 0, since the variables are a linear combination of other variables as shown.

Final Model 4: Logistic Regression (Offset-Adjusted)

The LOGISTIC Procedure

pubid_10 =	Intercept - pubid_1 - pubid_2 - pubid_3 - pubid_4 - pubid_5 - pubid_6 - pubid_7 - pubid_8 - pubid_9
os_10 =	Intercept - os_1 - os_2 - os_3 - os_4 - os_5 - os_6 - os_7 - os_8 - os_9
plat_android =	Intercept - plat_ios
make_10 =	Intercept - make_1 - make_2 - make_3 - make_4 - make_5 - make_6 - make_7 - make_8 - make_9

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-5.8009	0.3981	212.3010	<.0001
pubid_1	1	1.4971	0.8288	3.2634	0.0708
pubid_2	1	0.3168	0.1609	3.8791	0.0489
pubid_3	1	0.7081	0.1373	26.6036	<.0001
pubid_4	1	-0.0609	0.1859	0.1072	0.7433
pubid_5	1	0.1013	0.1936	0.2739	0.6007
pubid_6	1	-0.6514	0.3074	4.4925	0.0340
pubid_7	1	-0.6250	0.2556	5.9803	0.0145
pubid_8	1	-0.5818	0.2828	4.2315	0.0397
pubid_9	1	-0.3401	0.2522	1.8190	0.1774
pubid_10	0	0	.	.	.
os_1	1	0.3264	0.1577	4.2827	0.0385
os_2	1	0.2675	0.1930	1.9206	0.1658
os_3	1	0.0975	0.2106	0.2143	0.6434
os_4	1	0.3855	0.1862	4.2883	0.0384
os_5	1	0.4613	0.2388	3.7310	0.0534
os_6	1	0.4442	0.2491	3.1794	0.0746
os_7	1	-0.0171	0.3667	0.0022	0.9627
os_8	1	0.3377	0.2784	1.4712	0.2252
os_9	1	0.0942	0.3984	0.0560	0.8130
os_10	0	0	.	.	.
plat_ios	1	0.1769	0.4206	0.1769	0.6741
plat_android	0	0	.	.	.
make_1	1	-0.4303	0.2376	3.2807	0.0701
make_2	1	-0.6023	0.2432	6.1348	0.0133
make_3	1	-0.2499	0.2635	0.8994	0.3429
make_4	1	-0.6579	0.2743	5.7514	0.0165
make_5	1	-0.3202	0.2783	1.3235	0.2500
make_6	1	-0.7311	0.2971	6.0561	0.0139

Final Model 4: Logistic Regression (Offset-Adjusted)

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
make_7	1	0.1221	0.2601	0.2202	0.6389
make_8	1	-0.3298	0.3020	1.1926	0.2748
make_9	1	-0.5430	0.3103	3.0626	0.0801
make_10	0	0	.	.	.
wifi	1	0.3123	0.0976	10.2306	0.0014
device_height	1	0.000454	0.000122	13.9291	0.0002
device_width	1	0.000056	0.000115	0.2330	0.6293
device_volume	1	0.1554	0.1329	1.3675	0.2422
off	0	1.0000	0	.	.

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
pubid_1	4.469	0.881	22.680
pubid_2	1.373	1.002	1.882
pubid_3	2.030	1.551	2.657
pubid_4	0.941	0.654	1.355
pubid_5	1.107	0.757	1.617
pubid_6	0.521	0.285	0.952
pubid_7	0.535	0.324	0.883
pubid_8	0.559	0.321	0.973
pubid_9	0.712	0.434	1.167
os_1	1.386	1.017	1.888
os_2	1.307	0.895	1.908
os_3	1.102	0.730	1.666
os_4	1.470	1.021	2.118
os_5	1.586	0.993	2.533
os_6	1.559	0.957	2.541
os_7	0.983	0.479	2.017
os_8	1.402	0.812	2.419
os_9	1.099	0.503	2.399
plat_ios	1.194	0.523	2.722
make_1	0.650	0.408	1.036
make_2	0.548	0.340	0.882
make_3	0.779	0.465	1.305

Final Model 4: Logistic Regression (Offset-Adjusted)

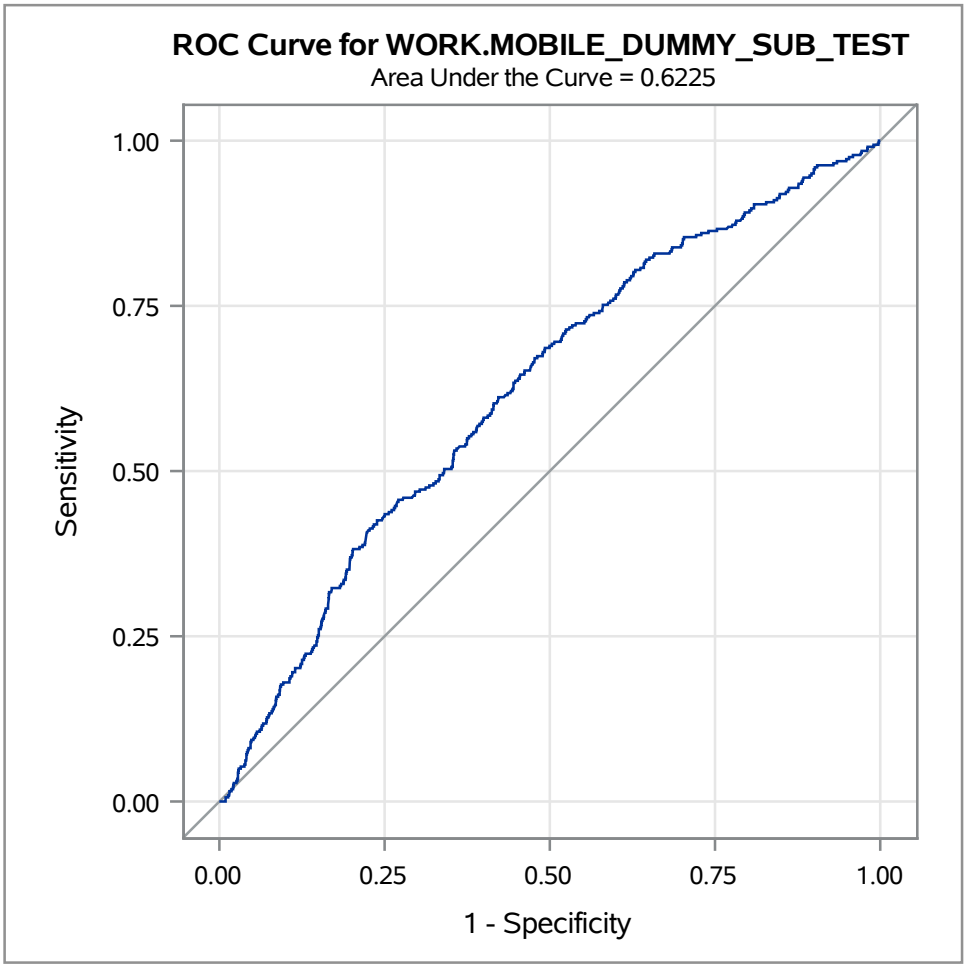
The LOGISTIC Procedure

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
make_4	0.518	0.303	0.887
make_5	0.726	0.421	1.253
make_6	0.481	0.269	0.862
make_7	1.130	0.679	1.881
make_8	0.719	0.398	1.300
make_9	0.581	0.316	1.067
wifi	1.367	1.129	1.655
device_height	1.000	1.000	1.001
device_width	1.000	1.000	1.000
device_volume	1.168	0.900	1.516

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	62.9	Somers' D	0.259
Percent Discordant	37.1	Gamma	0.259
Percent Tied	0.0	Tau-a	0.047
Pairs	4153044	c	0.629

Final Model 4: Logistic Regression (Offset-Adjusted)

The LOGISTIC Procedure



Final Model 4: Logistic Regression (Offset-Adjusted)

The LOGISTIC Procedure

Model Information		
Data Set	WORK.MOBILE_LOG_OFFSET_TEST	Posterior Probabilities for DATA=WORK.MOBILE_DUMMY_SUB_TEST.
Response Variable	install	
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	2888
Number of Observations Used	2888

Response Profile		
Ordered Value	**install**	**Total Frequency**
1	0	2566
2	1	322

Probability modeled is install='1'.

Score Test for Global Null Hypothesis		
Chi-Square	**DF**	**Pr > ChiSq**
24.2998	4	<.0001

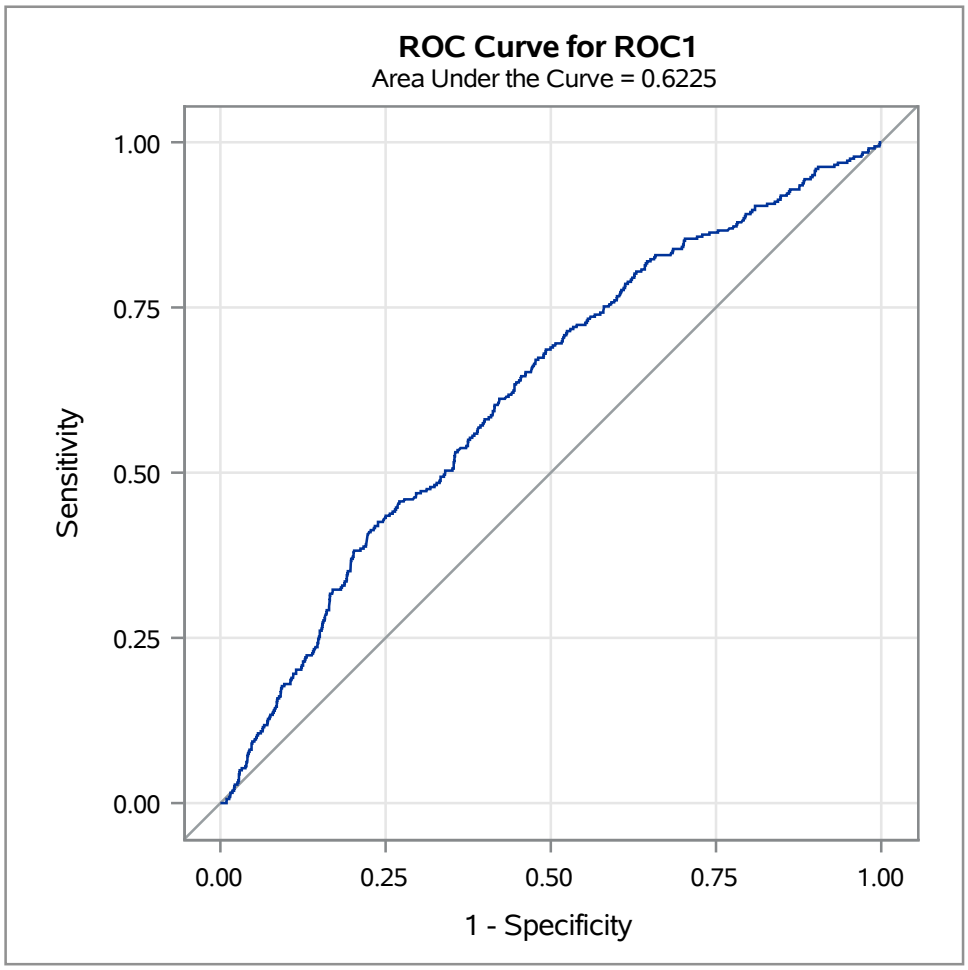
ROC Model: ROC1

ROC Model Information		
ROC Contrast Coefficients	P_1	Predicted Probability: install=1

Final Model 4: Logistic Regression (Offset-Adjusted)

The LOGISTIC Procedure

ROC Model: ROC1



ROC Association Statistics							
	Mann-Whitney						
ROC Model	Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
ROC1	0.6225	0.0163	0.5905	0.6545	0.2450	0.2451	0.0486

The MEANS Procedure

Variable	Sum
falpos_001	2565
falneg_001	0
cost_001	2565
falpos_005	2560
falneg_005	0
cost_005	2560
falpos_010	2550
falneg_010	0
cost_010	2550
falpos_015	2542
falneg_015	2
cost_015	2742
falpos_020	2520
falneg_020	4
cost_020	2920
falpos_025	2507
falneg_025	4
cost_025	2907
falpos_030	2490
falneg_030	6
cost_030	3090
falpos_035	2472
falneg_035	7
cost_035	3172
falpos_040	2450
falneg_040	8
cost_040	3250
falpos_045	2399
falneg_045	9
cost_045	3299
falpos_050	2335
falneg_050	12
cost_050	3535

Total Costs Final Model 2: Logistic Regression (Unadjusted)

Obs	_PROB_	_POS_	_NEG_	_FALPOS_	_FALNEG_	_SENSIT_	_1MSPEC_	total_cost
1	0.028586	322	5	2561	0	1	0.99805	2561

Total Costs Final Model 3: Logistic Regression (Weight-Adjusted)

Obs	_PROB_	_POS_	_NEG_	_FALPOS_	_FALNEG_	_SENSIT_	_1MSPEC_	total_cost
1	.002102956	322	5	2561	0	1	0.99805	2561

Total Costs Final Model 3: Logistic Regression (Offset-Adjusted)

Obs	_PROB_	_POS_	_NEG_	_FALPOS_	_FALNEG_	_SENSIT_	_1MSPEC_	total_cost
1	0.028568	322	5	2561	0	1	0.99805	2561