

## The SAS System

## The VARMAX Procedure

Number of Observations	130
Number of Pairwise Missing	0
Observation(s) eliminated by differencing	1

Simple Summary Statistics							
Variable	Type	N	Mean	Standard Deviation	Min	Max	Difference
Gasoline_Gallons	Dependent	130	466427.53846	24198910.091	-80870462.00	64468230.000	1
Diesel_Gallons	Dependent	130	-6637.70769	6815673.1067	-29756024.00	19994713.000	1
Total_Gallons_ST_Road_Tax	Dependent	130	577877.29231	28563214.919	-109647055.0	72433169.000	1
Registration_Fee	Dependent	130	155.24231	71591.66847	-454443.0000	418695.50000	1
Overweight	Dependent	130	-114.84869	92220.07014	-452181.3100	616880.00000	1
Title_fee	Dependent	130	8781.43708	1003859.3366	-3775854.060	4557874.9700	1

Granger-Causality Wald Test				
Test	DF	Chi-Square	Pr > ChiSq	
1	10	14.91	0.1355	

Test 1: Group 1 Variables:	Gasoline_Gallons
Group 2 Variables:	Diesel_Gallons Total_Gallons_ST_Road_Tax Registration_Fee Overweight Title_fee

## The SAS System

## The VARMAX Procedure

Type of Model	VAR(2)
Estimation Method	Least Squares Estimation

Constant Estimates	
Variable	Constant
Gasoline_Gallons	685453.82677
Diesel_Gallons	-448.66322
Total_Gallons_ST_Road_Tax	796959.92570
Registration_Fee	818.35317
Overweight	474.03186
Title_fee	17625.08749

AR Coefficient Estimates							
Lag	Variable	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
1	Gasoline_Gallons	-0.69204	0.43075	0.14467	-2.09635	2.11978	2.67095
	Diesel_Gallons	0.09409	-0.20518	-0.09800	18.52125	-11.06382	0.76910
	Total_Gallons_ST_Road_Tax	-0.25522	0.33608	-0.32116	26.75424	-16.23797	3.28433
	Registration_Fee	0.00067	0.00095	-0.00071	-0.50549	0.23659	-0.00850
	Overweight	0.00006	-0.00092	-0.00018	-0.06299	-0.15812	-0.00689
	Title_fee	-0.00881	-0.01959	0.00947	1.46905	0.41689	-0.33774
2	Gasoline_Gallons	-0.93264	-0.48761	0.78292	-1.67232	20.45999	-1.08588
	Diesel_Gallons	-0.16661	-0.39082	0.17606	-5.58112	1.77090	-0.64390
	Total_Gallons_ST_Road_Tax	-0.67891	-0.44708	0.50997	-22.21644	39.28873	-0.64156
	Registration_Fee	-0.00114	-0.00036	0.00103	-0.23506	-0.07747	-0.00316
	Overweight	-0.00230	-0.00218	0.00201	0.06789	-0.29077	-0.01167
	Title_fee	-0.01147	0.01164	0.00334	4.81737	-0.64107	-0.25184

Schematic Representation of Parameter Estimates			
Variable/Lag	C	AR1	AR2
Gasoline_Gallons	.	~.....	~.+...
Diesel_Gallons	.	.....	--+...
Total_Gallons_ST_Road_Tax	.	.....	~.....
Registration_Fee	.	...~+.	.....
Overweight	.	.....	~...~.
Title_fee	.	.....~	...+.-
+ is > 2*std error, - is < -2*std error, . is between, * is N/A			

Model Parameter Estimates						
Equation	Parameter	Estimate	Standard Error	t Value	Pr >  t	Variable
Gasoline_Gallons	CONST1	685453.82677	1930441.9772	0.36	0.7232	1
	AR1_1_1	-0.69204	0.27314	-2.53	0.0126	Gasoline_Gallons(t-1)
	AR1_1_2	0.43075	0.44359	0.97	0.3336	Diesel_Gallons(t-1)
	AR1_1_3	0.14467	0.25387	0.57	0.5699	Total_Gallons_ST_Road_Tax(t-1)
	AR1_1_4	-2.09635	43.66862	-0.05	0.9618	Registration_Fee(t-1)
	AR1_1_5	2.11978	31.94610	0.07	0.9472	Overweight(t-1)
	AR1_1_6	2.67095	2.05022	1.30	0.1953	Title_fee(t-1)
	AR2_1_1	-0.93264	0.28247	-3.30	0.0013	Gasoline_Gallons(t-2)
	AR2_1_2	-0.48761	0.44148	-1.10	0.2717	Diesel_Gallons(t-2)
	AR2_1_3	0.78292	0.25588	3.06	0.0028	Total_Gallons_ST_Road_Tax(t-2)
	AR2_1_4	-1.67232	43.42670	-0.04	0.9693	Registration_Fee(t-2)

	AR2_1_5	20.45999	32.50377	0.63	0.5303	Overweight(t-2)
	AR2_1_6	-1.08588	2.09302	-0.52	0.6049	Title_fee(t-2)
Diesel_Gallons	CONST2	-448.66322	550850.93060	-0.00	0.9994	1
	AR1_2_1	0.09409	0.07794	1.21	0.2298	Gasoline_Gallons(t-1)
	AR1_2_2	-0.20518	0.12658	-1.62	0.1078	Diesel_Gallons(t-1)
	AR1_2_3	-0.09800	0.07244	-1.35	0.1788	Total_Gallons_ST_Road_Tax(t-1)
	AR1_2_4	18.52125	12.46082	1.49	0.1399	Registration_Fee(t-1)
	AR1_2_5	-11.06382	9.11581	-1.21	0.2274	Overweight(t-1)
	AR1_2_6	0.76910	0.58503	1.31	0.1912	Title_fee(t-1)
	AR2_2_1	-0.16661	0.08060	-2.07	0.0410	Gasoline_Gallons(t-2)
	AR2_2_2	-0.39082	0.12598	-3.10	0.0024	Diesel_Gallons(t-2)
	AR2_2_3	0.17606	0.07301	2.41	0.0175	Total_Gallons_ST_Road_Tax(t-2)
	AR2_2_4	-5.58112	12.39179	-0.45	0.6533	Registration_Fee(t-2)
	AR2_2_5	1.77090	9.27494	0.19	0.8489	Overweight(t-2)
	AR2_2_6	-0.64390	0.59724	-1.08	0.2832	Title_fee(t-2)
Total_Gallons_ST_Road_Tax	CONST3	796959.92570	2307250.5698	0.35	0.7304	1
	AR1_3_1	-0.25522	0.32646	-0.78	0.4359	Gasoline_Gallons(t-1)
	AR1_3_2	0.33608	0.53017	0.63	0.5274	Diesel_Gallons(t-1)
	AR1_3_3	-0.32116	0.30342	-1.06	0.2921	Total_Gallons_ST_Road_Tax(t-1)
	AR1_3_4	26.75424	52.19242	0.51	0.6092	Registration_Fee(t-1)
	AR1_3_5	-16.23797	38.18175	-0.43	0.6714	Overweight(t-1)
	AR1_3_6	3.28433	2.45040	1.34	0.1828	Title_fee(t-1)
	AR2_3_1	-0.67891	0.33761	-2.01	0.0467	Gasoline_Gallons(t-2)
	AR2_3_2	-0.44708	0.52765	-0.85	0.3986	Diesel_Gallons(t-2)
	AR2_3_3	0.50997	0.30582	1.67	0.0981	Total_Gallons_ST_Road_Tax(t-2)
	AR2_3_4	-22.21644	51.90328	-0.43	0.6694	Registration_Fee(t-2)
	AR2_3_5	39.28873	38.84827	1.01	0.3140	Overweight(t-2)
	AR2_3_6	-0.64156	2.50156	-0.26	0.7981	Title_fee(t-2)
Registration_Fee	CONST4	818.35317	5685.79037	0.14	0.8858	1
	AR1_4_1	0.00067	0.00080	0.84	0.4038	Gasoline_Gallons(t-1)
	AR1_4_2	0.00095	0.00131	0.73	0.4691	Diesel_Gallons(t-1)
	AR1_4_3	-0.00071	0.00075	-0.95	0.3455	Total_Gallons_ST_Road_Tax(t-1)
	AR1_4_4	-0.50549	0.12862	-3.93	0.0001	Registration_Fee(t-1)
	AR1_4_5	0.23659	0.09409	2.51	0.0133	Overweight(t-1)
	AR1_4_6	-0.00850	0.00604	-1.41	0.1619	Title_fee(t-1)
	AR2_4_1	-0.00114	0.00083	-1.37	0.1726	Gasoline_Gallons(t-2)
	AR2_4_2	-0.00036	0.00130	-0.28	0.7824	Diesel_Gallons(t-2)
	AR2_4_3	0.00103	0.00075	1.36	0.1758	Total_Gallons_ST_Road_Tax(t-2)
	AR2_4_4	-0.23506	0.12791	-1.84	0.0687	Registration_Fee(t-2)
	AR2_4_5	-0.07747	0.09573	-0.81	0.4201	Overweight(t-2)
	AR2_4_6	-0.00316	0.00616	-0.51	0.6088	Title_fee(t-2)
Overweight	CONST5	474.03186	7829.02186	0.06	0.9518	1
	AR1_5_1	0.00006	0.00111	0.06	0.9543	Gasoline_Gallons(t-1)
	AR1_5_2	-0.00092	0.00180	-0.51	0.6099	Diesel_Gallons(t-1)
	AR1_5_3	-0.00018	0.00103	-0.18	0.8582	Total_Gallons_ST_Road_Tax(t-1)
	AR1_5_4	-0.06299	0.17710	-0.36	0.7227	Registration_Fee(t-1)
	AR1_5_5	-0.15812	0.12956	-1.22	0.2248	Overweight(t-1)
	AR1_5_6	-0.00689	0.00831	-0.83	0.4090	Title_fee(t-1)
	AR2_5_1	-0.00230	0.00115	-2.01	0.0470	Gasoline_Gallons(t-2)
	AR2_5_2	-0.00218	0.00179	-1.22	0.2268	Diesel_Gallons(t-2)
	AR2_5_3	0.00201	0.00104	1.94	0.0549	Total_Gallons_ST_Road_Tax(t-2)
	AR2_5_4	0.06789	0.17612	0.39	0.7006	Registration_Fee(t-2)

	AR2_5_5	-0.29077	0.13182	-2.21	0.0294	Overweight(t-2)
	AR2_5_6	-0.01167	0.00849	-1.37	0.1720	Title_fee(t-2)
Title_fee	CONST6	17625.08749	80546.22519	0.22	0.8272	1
	AR1_6_1	-0.00881	0.01140	-0.77	0.4409	Gasoline_Gallons(t-1)
	AR1_6_2	-0.01959	0.01851	-1.06	0.2921	Diesel_Gallons(t-1)
	AR1_6_3	0.00947	0.01059	0.89	0.3734	Total_Gallons_ST_Road_Tax(t-1)
	AR1_6_4	1.46905	1.82204	0.81	0.4218	Registration_Fee(t-1)
	AR1_6_5	0.41689	1.33293	0.31	0.7550	Overweight(t-1)
	AR1_6_6	-0.33774	0.08554	-3.95	0.0001	Title_fee(t-1)
	AR2_6_1	-0.01147	0.01179	-0.97	0.3327	Gasoline_Gallons(t-2)
	AR2_6_2	0.01164	0.01842	0.63	0.5286	Diesel_Gallons(t-2)
	AR2_6_3	0.00334	0.01068	0.31	0.7551	Total_Gallons_ST_Road_Tax(t-2)
	AR2_6_4	4.81737	1.81195	2.66	0.0090	Registration_Fee(t-2)
	AR2_6_5	-0.64107	1.35619	-0.47	0.6373	Overweight(t-2)
	AR2_6_6	-0.25184	0.08733	-2.88	0.0047	Title_fee(t-2)

Covariances of Innovations						
Variable	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
Gasoline_Gallons	4.7476944E14	8.57046E13	5.3797662E14	-85861047463	-19381996314	627215459848
Diesel_Gallons	8.57046E13	3.8657826E13	1.1589271E14	-68135641425	-80783263204	-16139744261
Total_Gallons_ST_Road_Tax	5.3797662E14	1.1589271E14	6.7820154E14	-1.567308E11	-1.133793E11	822807048923
Registration_Fee	-85861047463	-68135641425	-1.567308E11	4118612538.9	4139728005.9	4319510155.1
Overweight	-19381996314	-80783263204	-1.133793E11	4139728005.9	7808799324.1	-3626656183
Title_fee	627215459848	-16139744261	822807048923	4319510155.1	-3626656183	826531927814

Log-likelihood	-11075.5
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Information Criteria	
AICC	23056.22
HQC	22463.8
AIC	22349.08
SBC	22631.43
FPEC	1.209E73

Cross Covariances of Residuals							
Lag	Variable	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
0	Gasoline_Gallons	4.2655067E14	7.7000226E13	4.8333837E14	-77140784830	-17413512313	563513889707
	Diesel_Gallons	7.7000226E13	3.473164E13	1.0412236E14	-61215615343	-72578713035	-14500551484
	Total_Gallons_ST_Road_Tax	4.8333837E14	1.0412236E14	6.093217E14	-1.408128E11	-1.018642E11	739240708017
	Registration_Fee	-77140784830	-61215615343	-1.408128E11	3700315952.9	3719286880.3	3880809905.0
	Overweight	-17413512313	-72578713035	-1.018642E11	3719286880.3	7015718142.7	-3258323914
	Title_fee	563513889707	-14500551484	739240708017	3880809905.0	-3258323914	742587278895
1	Gasoline_Gallons	-8.773233E11	-3.471875E12	-4.21272E12	12648829461	-10266050451	43471230794
	Diesel_Gallons	171389425101	-2.692674E12	-2.056112E12	4882525483.8	-6704990777	-84782588707
	Total_Gallons_ST_Road_Tax	-4.789792E12	-4.610245E12	-1.084439E13	12535975532	-1113918857	-1.875653E11
	Registration_Fee	-13635438191	-15953812604	-7281486131	-171726698.0	-236437573.7	677744762.31
	Overweight	-47247352156	-32527381908	-48984264885	-101375527.4	-341517322.8	-841401333.6
	Title_fee	243833616127	197889054931	279438122900	-1135343763	-642802566.8	-57430896188
2	Gasoline_Gallons	-5.66817E13	-1.900693E13	-7.098242E13	61670608685	2731289415.1	381257123444
	Diesel_Gallons	-7.043846E12	-3.642888E12	-1.241648E13	22087490773	9785597301.6	160004610746
	Total_Gallons_ST_Road_Tax	-6.466896E13	-2.222225E13	-8.520792E13	71959548693	10812323683	141729314873
	Registration_Fee	58426539595	20455935288	78588550747	-579748232.6	-483083761.7	-1783392327
	Overweight	-35688390198	-16871869992	-44267699563	-178300315.6	-517074763.9	-1804458121
	Title_fee	682642261447	-2.996955E11	431463007926	4386749389.8	2828831522.1	-72772776512

3	Gasoline_Gallons	-8.023909E13	-2.958563E13	-1.101667E14	-23857570530	-99035276409	-5.12335E11
	Diesel_Gallons	-9.288382E12	-7.76334E12	-1.983479E13	23711930446	2322527146.2	-1.793571E11
	Total_Gallons_ST_Road_Tax	-9.987846E13	-3.605756E13	-1.428382E14	-13185703799	-98994283658	-1.282981E12
	Registration_Fee	69351419302	-9156029881	105627073144	-818494726.3	-686931360.5	1998929603.2
	Overweight	-71286266892	-5611312087	3823097704.1	-662870137.1	-1088503945	3652724442.4
	Title_fee	1.4389026E12	394402246559	1.6822559E12	-9684090265	-4475366972	-1.753259E11

Cross Covariances of Residuals by Variable							
Variable	Lag	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
Gasoline_Gallons	0	4.2655067E14	7.7000226E13	4.8333837E14	-77140784830	-17413512313	563513889707
	1	-8.773233E11	-3.471875E12	-4.21272E12	12648829461	-10266050451	43471230794
	2	-5.66817E13	-1.900693E13	-7.098242E13	61670608685	2731289415.1	381257123444
	3	-8.023909E13	-2.958563E13	-1.101667E14	-23857570530	-99035276409	-5.12335E11
Diesel_Gallons	0	7.7000226E13	3.473164E13	1.0412236E14	-61215615343	-72578713035	-14500551484
	1	171389425101	-2.692674E12	-2.056112E12	4882525483.8	-6704990777	-84782588707
	2	-7.043846E12	-3.642888E12	-1.241648E13	22087490773	9785597301.6	160004610746
	3	-9.288382E12	-7.76334E12	-1.983479E13	23711930446	2322527146.2	-1.793571E11
Total_Gallons_ST_Road_Tax	0	4.8333837E14	1.0412236E14	6.093217E14	-1.408128E11	-1.018642E11	739240708017
	1	-4.789792E12	-4.610245E12	-1.084439E13	12535975532	-1113918857	-1.875653E11
	2	-6.466896E13	-2.222225E13	-8.520792E13	71959548693	10812323683	141729314873
	3	-9.987846E13	-3.605756E13	-1.428382E14	-13185703799	-98994283658	-1.282981E12
Registration_Fee	0	-77140784830	-61215615343	-1.408128E11	3700315952.9	3719286880.3	3880809905.0
	1	-13635438191	-15953812604	-7281486131	-171726698.0	-236437573.7	677744762.31
	2	58426539595	20455935288	78588550747	-579748232.6	-483083761.7	-1783392327
	3	69351419302	-9156029881	105627073144	-818494726.3	-686931360.5	1998929603.2
Overweight	0	-17413512313	-72578713035	-1.018642E11	3719286880.3	7015718142.7	-3258323914
	1	-47247352156	-32527381908	-48984264885	-101375527.4	-341517322.8	-841401333.6
	2	-35688390198	-16871869992	-44267699563	-178300315.6	-517074763.9	-1804458121
	3	-71286266892	-5611312087	3823097704.1	-662870137.1	-1088503945	3652724442.4
Title_fee	0	563513889707	-14500551484	739240708017	3880809905.0	-3258323914	742587278895
	1	243833616127	197889054931	279438122900	-1135343763	-642802566.8	-57430896188
	2	682642261447	-2.996955E11	431463007926	4386749389.8	2828831522.1	-72772776512
	3	1.4389026E12	394402246559	1.6822559E12	-9684090265	-4475366972	-1.753259E11

Cross Correlations of Residuals							
Lag	Variable	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
0	Gasoline_Gallons	1.00000	0.63262	0.94807	-0.06140	-0.01007	0.03166
	Diesel_Gallons	0.63262	1.00000	0.71574	-0.17076	-0.14703	-0.00286
	Total_Gallons_ST_Road_Tax	0.94807	0.71574	1.00000	-0.09378	-0.04927	0.03475
	Registration_Fee	-0.06140	-0.17076	-0.09378	1.00000	0.72997	0.07403
	Overweight	-0.01007	-0.14703	-0.04927	0.72997	1.00000	-0.04514
	Title_fee	0.03166	-0.00286	0.03475	0.07403	-0.04514	1.00000
1	Gasoline_Gallons	-0.00206	-0.02852	-0.00826	0.01007	-0.00593	0.00244
	Diesel_Gallons	0.00141	-0.07753	-0.01413	0.01362	-0.01358	-0.01669
	Total_Gallons_ST_Road_Tax	-0.00940	-0.03169	-0.01780	0.00835	-0.00054	-0.00882
	Registration_Fee	-0.01085	-0.04450	-0.00485	-0.04641	-0.04640	0.01293
	Overweight	-0.02731	-0.06589	-0.02369	-0.01990	-0.04868	-0.01166
	Title_fee	0.01370	0.03897	0.01314	-0.02166	-0.00891	-0.07734
2	Gasoline_Gallons	-0.13288	-0.15616	-0.13923	0.04909	0.00158	0.02142
	Diesel_Gallons	-0.05787	-0.10489	-0.08535	0.06161	0.01982	0.03151
	Total_Gallons_ST_Road_Tax	-0.12685	-0.15276	-0.13984	0.04792	0.00523	0.00666
	Registration_Fee	0.04651	0.05706	0.05234	-0.15668	-0.09481	-0.03402
	Overweight	-0.02063	-0.03418	-0.02141	-0.03499	-0.07370	-0.02500

	Title_fee	0.03836	-0.05901	0.02028	0.08369	0.03919	-0.09800
3	Gasoline_Gallons	-0.18811	-0.24307	-0.21609	-0.01899	-0.05725	-0.02879
	Diesel_Gallons	-0.07631	-0.22352	-0.13635	0.06614	0.00471	-0.03532
	Total_Gallons_ST_Road_Tax	-0.19591	-0.24786	-0.23442	-0.00878	-0.04788	-0.06031
	Registration_Fee	0.05520	-0.02554	0.07034	-0.22120	-0.13482	0.03813
	Overweight	-0.04121	-0.01137	0.00185	-0.13010	-0.15515	0.05061
	Title_fee	0.08085	0.07766	0.07909	-0.18474	-0.06200	-0.23610

Cross Correlations of Residuals by Variable							
Variable	Lag	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
Gasoline_Gallons	0	1.00000	0.63262	0.94807	-0.06140	-0.01007	0.03166
	1	-0.00206	-0.02852	-0.00826	0.01007	-0.00593	0.00244
	2	-0.13288	-0.15616	-0.13923	0.04909	0.00158	0.02142
	3	-0.18811	-0.24307	-0.21609	-0.01899	-0.05725	-0.02879
Diesel_Gallons	0	0.63262	1.00000	0.71574	-0.17076	-0.14703	-0.00286
	1	0.00141	-0.07753	-0.01413	0.01362	-0.01358	-0.01669
	2	-0.05787	-0.10489	-0.08535	0.06161	0.01982	0.03151
	3	-0.07631	-0.22352	-0.13635	0.06614	0.00471	-0.03532
Total_Gallons_ST_Road_Tax	0	0.94807	0.71574	1.00000	-0.09378	-0.04927	0.03475
	1	-0.00940	-0.03169	-0.01780	0.00835	-0.00054	-0.00882
	2	-0.12685	-0.15276	-0.13984	0.04792	0.00523	0.00666
	3	-0.19591	-0.24786	-0.23442	-0.00878	-0.04788	-0.06031
Registration_Fee	0	-0.06140	-0.17076	-0.09378	1.00000	0.72997	0.07403
	1	-0.01085	-0.04450	-0.00485	-0.04641	-0.04640	0.01293
	2	0.04651	0.05706	0.05234	-0.15668	-0.09481	-0.03402
	3	0.05520	-0.02554	0.07034	-0.22120	-0.13482	0.03813
Overweight	0	-0.01007	-0.14703	-0.04927	0.72997	1.00000	-0.04514
	1	-0.02731	-0.06589	-0.02369	-0.01990	-0.04868	-0.01166
	2	-0.02063	-0.03418	-0.02141	-0.03499	-0.07370	-0.02500
	3	-0.04121	-0.01137	0.00185	-0.13010	-0.15515	0.05061
Title_fee	0	0.03166	-0.00286	0.03475	0.07403	-0.04514	1.00000
	1	0.01370	0.03897	0.01314	-0.02166	-0.00891	-0.07734
	2	0.03836	-0.05901	0.02028	0.08369	0.03919	-0.09800
	3	0.08085	0.07766	0.07909	-0.18474	-0.06200	-0.23610

Schematic Representation of Cross Correlations of Residuals				
Variable/Lag	0	1	2	3
Gasoline_Gallons	+++...	.....	.....	---...
Diesel_Gallons	+++...	.....	.....	.-.....
Total_Gallons_ST_Road_Tax	+++...	.....	.....	---...
Registration_Fee	...++.	.....	.....	...-..
Overweight	...++.	.....	.....	.....
Title_fee	.....+	.....	.....	...-.-
+ is > 2*std error, - is < -2*std error, . is between				

Portmanteau Test for Cross Correlations of Residuals			
Up To Lag	DF	Chi-Square	Pr > ChiSq
3	36	74.84	0.0002

Univariate Model ANOVA Diagnostics				
Variable	R-Square	Standard Deviation	F Value	Pr > F
Gasoline_Gallons	0.2736	21789204.651	3.61	0.0001

Diesel_Gallons	0.2580	6217541.7861	3.33	0.0004
Total_Gallons_ST_Road_Tax	0.2557	26042302.975	3.29	0.0004
Registration_Fee	0.2828	64176.41731	3.78	<.0001
Overweight	0.1800	88367.41098	2.10	0.0217
Title_fee	0.2671	909138.01362	3.49	0.0002

Univariate Model White Noise Diagnostics					
Variable	Durbin Watson	Normality		ARCH	
		Chi-Square	Pr > ChiSq	F Value	Pr > F
Gasoline_Gallons	1.99973	30.95	<.0001	20.55	<.0001
Diesel_Gallons	2.14874	25.65	<.0001	45.31	<.0001
Total_Gallons_ST_Road_Tax	2.03274	15.31	0.0005	31.88	<.0001
Registration_Fee	2.08832	1137.84	<.0001	0.50	0.4824
Overweight	2.09606	1117.91	<.0001	0.03	0.8660
Title_fee	2.14497	131.92	<.0001	0.22	0.6383

Univariate Model AR Diagnostics								
Variable	AR1		AR2		AR3		AR4	
	F Value	Pr > F	F Value	Pr > F	F Value	Pr > F	F Value	Pr > F
Gasoline_Gallons	0.00	0.9815	1.19	0.3088	2.56	0.0584	1.90	0.1141
Diesel_Gallons	0.76	0.3846	1.14	0.3226	3.42	0.0194	2.84	0.0270
Total_Gallons_ST_Road_Tax	0.04	0.8423	1.31	0.2747	3.78	0.0124	2.84	0.0271
Registration_Fee	0.27	0.6037	1.75	0.1772	3.77	0.0126	4.76	0.0014
Overweight	0.30	0.5866	0.51	0.6028	1.46	0.2286	2.89	0.0252
Title_fee	0.76	0.3853	1.07	0.3472	3.76	0.0127	3.71	0.0069

Simple Impulse Response							
Lag	Variable Response\Impulse	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
1	Gasoline_Gallons	-0.69204	0.43075	0.14467	-2.09635	2.11978	2.67095
	STD	0.27314	0.44359	0.25387	43.66862	31.94610	2.05022
	Diesel_Gallons	0.09409	-0.20518	-0.09800	18.52125	-11.06382	0.76910
	STD	0.07794	0.12658	0.07244	12.46082	9.11581	0.58503
	Total_Gallons_ST_Road_Tax	-0.25522	0.33608	-0.32116	26.75424	-16.23797	3.28433
	STD	0.32646	0.53017	0.30342	52.19242	38.18175	2.45040
	Registration_Fee	0.00067	0.00095	-0.00071	-0.50549	0.23659	-0.00850
	STD	0.00080	0.00131	0.00075	0.12862	0.09409	0.00604
	Overweight	0.00006	-0.00092	-0.00018	-0.06299	-0.15812	-0.00689
	STD	0.00111	0.00180	0.00103	0.17710	0.12956	0.00831
2	Title_fee	-0.00881	-0.01959	0.00947	1.46905	0.41689	-0.33774
	STD	0.01140	0.01851	0.01059	1.82204	1.33293	0.08554
	Gasoline_Gallons	-0.47493	-0.88172	0.62050	16.47692	12.16048	-3.02673
	STD	0.30081	0.47171	0.27518	45.71795	34.63170	2.24964
	Diesel_Gallons	-0.22101	-0.32843	0.23746	-19.73615	12.28377	-1.21325
	STD	0.08121	0.12879	0.07438	12.34980	9.38047	0.61215
	Total_Gallons_ST_Road_Tax	-0.40064	-0.75791	0.55838	-31.72525	50.51073	-3.34433
	STD	0.36237	0.56755	0.33147	55.07744	41.70512	2.70761
	Registration_Fee	-0.00159	-0.00103	0.00149	-0.00971	-0.23558	0.00258
	STD	0.00084	0.00134	0.00077	0.12862	0.09761	0.00637
3	Overweight	-0.00238	-0.00180	0.00218	0.07746	-0.27023	-0.00886
	STD	0.00109	0.00174	0.00100	0.16539	0.12606	0.00827
	Title_fee	-0.00563	0.02267	-0.00337	3.46131	-0.45590	-0.16065
	STD	0.01193	0.01887	0.01092	1.81302	1.37703	0.08979
	Gasoline_Gallons	0.56823	0.38028	-0.60531	-3.23232	-10.49233	0.58023

<b>STD</b>	0.26090	0.35714	0.23018	39.06117	27.65351	1.75118
<b>Diesel_Gallons</b>	0.06806	0.15021	-0.08894	9.91917	-8.80764	0.39949
<b>STD</b>	0.07357	0.10338	0.06558	10.96312	7.62806	0.49394
<b>Total_Gallons_ST_Road_Tax</b>	0.44394	0.36013	-0.48018	23.80034	-35.11864	0.77649
<b>STD</b>	0.31124	0.42165	0.27388	46.60578	33.13925	2.08431
<b>Registration_Fee</b>	0.00040	-0.00063	-0.00027	0.15090	-0.01668	0.00079
<b>STD</b>	0.00079	0.00115	0.00071	0.11805	0.08149	0.00539
<b>Overweight</b>	0.00177	0.00127	-0.00157	-0.02521	0.08456	0.00804
<b>STD</b>	0.00095	0.00135	0.00085	0.13966	0.09394	0.00628
<b>Title_fee</b>	0.01690	0.00099	-0.01014	-3.64569	0.75437	0.11095
<b>STD</b>	0.01057	0.01501	0.00943	1.57463	1.08600	0.07112

Simple Impulse Response by Variable							
Variable Response\Impulse	Lag	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
<b>Gasoline_Gallons</b>	<b>1</b>	-0.69204	0.43075	0.14467	-2.09635	2.11978	2.67095
	<b>STD</b>	0.27314	0.44359	0.25387	43.66862	31.94610	2.05022
	<b>2</b>	-0.47493	-0.88172	0.62050	16.47692	12.16048	-3.02673
	<b>STD</b>	0.30081	0.47171	0.27518	45.71795	34.63170	2.24964
	<b>3</b>	0.56823	0.38028	-0.60531	-3.23232	-10.49233	0.58023
	<b>STD</b>	0.26090	0.35714	0.23018	39.06117	27.65351	1.75118
<b>Diesel_Gallons</b>	<b>1</b>	0.09409	-0.20518	-0.09800	18.52125	-11.06382	0.76910
	<b>STD</b>	0.07794	0.12658	0.07244	12.46082	9.11581	0.58503
	<b>2</b>	-0.22101	-0.32843	0.23746	-19.73615	12.28377	-1.21325
	<b>STD</b>	0.08121	0.12879	0.07438	12.34980	9.38047	0.61215
	<b>3</b>	0.06806	0.15021	-0.08894	9.91917	-8.80764	0.39949
	<b>STD</b>	0.07357	0.10338	0.06558	10.96312	7.62806	0.49394
<b>Total_Gallons_ST_Road_Tax</b>	<b>1</b>	-0.25522	0.33608	-0.32116	26.75424	-16.23797	3.28433
	<b>STD</b>	0.32646	0.53017	0.30342	52.19242	38.18175	2.45040
	<b>2</b>	-0.40064	-0.75791	0.55838	-31.72525	50.51073	-3.34433
	<b>STD</b>	0.36237	0.56755	0.33147	55.07744	41.70512	2.70761
	<b>3</b>	0.44394	0.36013	-0.48018	23.80034	-35.11864	0.77649
	<b>STD</b>	0.31124	0.42165	0.27388	46.60578	33.13925	2.08431
<b>Registration_Fee</b>	<b>1</b>	0.00067	0.00095	-0.00071	-0.50549	0.23659	-0.00850
	<b>STD</b>	0.00080	0.00131	0.00075	0.12862	0.09409	0.00604
	<b>2</b>	-0.00159	-0.00103	0.00149	-0.00971	-0.23558	0.00258
	<b>STD</b>	0.00084	0.00134	0.00077	0.12862	0.09761	0.00637
	<b>3</b>	0.00040	-0.00063	-0.00027	0.15090	-0.01668	0.00079
	<b>STD</b>	0.00079	0.00115	0.00071	0.11805	0.08149	0.00539
<b>Overweight</b>	<b>1</b>	0.00006	-0.00092	-0.00018	-0.06299	-0.15812	-0.00689
	<b>STD</b>	0.00111	0.00180	0.00103	0.17710	0.12956	0.00831
	<b>2</b>	-0.00238	-0.00180	0.00218	0.07746	-0.27023	-0.00886
	<b>STD</b>	0.00109	0.00174	0.00100	0.16539	0.12606	0.00827
	<b>3</b>	0.00177	0.00127	-0.00157	-0.02521	0.08456	0.00804
	<b>STD</b>	0.00095	0.00135	0.00085	0.13966	0.09394	0.00628
<b>Title_fee</b>	<b>1</b>	-0.00881	-0.01959	0.00947	1.46905	0.41689	-0.33774
	<b>STD</b>	0.01140	0.01851	0.01059	1.82204	1.33293	0.08554
	<b>2</b>	-0.00563	0.02267	-0.00337	3.46131	-0.45590	-0.16065
	<b>STD</b>	0.01193	0.01887	0.01092	1.81302	1.37703	0.08979
	<b>3</b>	0.01690	0.00099	-0.01014	-3.64569	0.75437	0.11095
	<b>STD</b>	0.01057	0.01501	0.00943	1.57463	1.08600	0.07112

Decomposition of Prediction Error Covariances							



Lead	Variable	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
1	Gasoline_Gallons	4.7476944E14	0.00000	0.00000	0.00000	0.00000	0.00000
	Diesel_Gallons	1.5471254E13	2.3186572E13	0.00000	0.00000	0.00000	0.00000
	Total_Gallons_ST_Road_Tax	6.0959872E14	1.5207739E13	5.3395088E13	0.00000	0.00000	0.00000
	Registration_Fee	15527788.565	119490015.76	5292511.3027	3978302223.2	0.00000	0.00000
	Overweight	791250.97361	257601134.76	15562917.639	3925281057.3	3609562963.4	0.00000
	Title_fee	828611112.00	721751956.65	880730370.21	4449995662.6	18152380768	801498457945
2	Gasoline_Gallons	5.6943433E14	6.5304216E12	1.2833769E12	31954607432	54058071354	5.7178856E12
	Diesel_Gallons	1.6953938E13	2.5190904E13	479230990669	277033639885	590333940350	474100460199
	Total_Gallons_ST_Road_Tax	7.5758244E14	1.5268177E13	5.8443035E13	790750139514	2.0109285E12	8.6456466E12
	Registration_Fee	21639867.185	133662227.70	32311119.052	4289030219.1	235911184.29	57921633.240
	Overweight	44311390.088	260626777.46	16176007.913	4130893990.7	3683031841.5	38056746.067
	Title_fee	3455233251.7	5774188045.0	3809859067.7	13713612464	23129755369	892923442492
3	Gasoline_Gallons	5.7123271E14	1.1024389E13	2.0279417E13	2.5895007E12	1.3499927E12	1.3060494E13
	Diesel_Gallons	1.6999172E13	2.5556039E13	3.3559833E12	586351673116	1.4029752E12	1.653878E12
	Total_Gallons_ST_Road_Tax	7.6182448E14	1.8675974E13	7.3301616E13	1.675243E12	1.4157899E13	1.7610045E13
	Registration_Fee	23949608.354	155407201.30	174740952.76	4520081811.1	446193473.95	63252260.092
	Overweight	73006489.211	273269527.15	290072016.11	4290550498.2	3909292594.8	100926621.74
	Title_fee	21583013897	10649083529	5075064459.8	45768202760	23162767817	913609491772
4	Gasoline_Gallons	5.7229192E14	1.1140848E13	3.9263325E13	3.2660631E12	1.8520358E12	1.3330332E13
	Diesel_Gallons	1.7019278E13	2.5714971E13	3.7480058E12	596446245782	1.7428442E12	1.7817879E12
	Total_Gallons_ST_Road_Tax	7.6247432E14	1.8696761E13	8.4874742E13	2.0942131E12	1.9062055E13	1.8093304E13
	Registration_Fee	24869238.261	185505587.03	179744493.46	4592767584.0	447422295.75	63751001.779
	Overweight	98081862.833	274928086.44	422215616.38	4308566610.7	3925266824.1	152782366.97
	Title_fee	40812262300	10749347884	9354699721.4	76492285801	24085312311	923476451638
5	Gasoline_Gallons	5.7431461E14	1.2644793E13	3.9557435E13	4.0224301E12	2.7753984E12	1.4099498E13
	Diesel_Gallons	1.7143713E13	2.5715521E13	4.1542747E12	596473614675	1.8711753E12	1.8917937E12
	Total_Gallons_ST_Road_Tax	7.634095E14	1.9297821E13	8.5191129E13	2.4494406E12	2.0138792E13	1.8364127E13
	Registration_Fee	29241333.376	188569711.82	239960424.48	4595044136.8	516825813.74	66432463.431
	Overweight	107532542.33	276245491.38	460786989.89	4308568955.5	3961477573.6	172317628.78
	Title_fee	41336408268	10774941157	14390061707	80001536565	28080818091	924170462735
6	Gasoline_Gallons	5.7447466E14	1.2898704E13	4.0924286E13	4.7124766E12	4.3938499E12	1.4250652E13
	Diesel_Gallons	1.7145034E13	2.5716366E13	4.4165937E12	596699915895	1.880387E12	1.9294007E12
	Total_Gallons_ST_Road_Tax	7.6343025E14	1.9400452E13	8.5733009E13	2.7356083E12	2.0725578E13	1.8394918E13
	Registration_Fee	29314853.798	190570120.51	260606794.74	4598922986.5	528365318.11	66697571.987
	Overweight	116279782.21	276247388.73	560632861.79	4313110050.1	3983101014.4	198408360.82
	Title_fee	42458587441	11021908961	14768556749	93239898810	28158700212	925742698531

Decomposition of Prediction Error Covariances by Variable							
Variable	Lead	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
Gasoline_Gallons	1	4.7476944E14	0.00000	0.00000	0.00000	0.00000	0.00000
	2	5.6943433E14	6.5304216E12	1.2833769E12	31954607432	54058071354	5.7178856E12
	3	5.7123271E14	1.1024389E13	2.0279417E13	2.5895007E12	1.3499927E12	1.3060494E13
	4	5.7229192E14	1.1140848E13	3.9263325E13	3.2660631E12	1.8520358E12	1.3330332E13
	5	5.7431461E14	1.2644793E13	3.9557435E13	4.0224301E12	2.7753984E12	1.4099498E13
	6	5.7447466E14	1.2898704E13	4.0924286E13	4.7124766E12	4.3938499E12	1.4250652E13
Diesel_Gallons	1	1.5471254E13	2.3186572E13	0.00000	0.00000	0.00000	0.00000
	2	1.6953938E13	2.5190904E13	479230990669	277033639885	590333940350	474100460199
	3	1.6999172E13	2.5556039E13	3.3559833E12	586351673116	1.4029752E12	1.653878E12
	4	1.7019278E13	2.5714971E13	3.7480058E12	596446245782	1.7428442E12	1.7817879E12
	5	1.7143713E13	2.5715521E13	4.1542747E12	596473614675	1.8711753E12	1.8917937E12
	6	1.7145034E13	2.5716366E13	4.4165937E12	596699915895	1.880387E12	1.9294007E12

Total_Gallons_ST_Road_Tax	1	6.0959872E14	1.5207739E13	5.3395088E13	0.00000	0.00000	0.00000
	2	7.5758244E14	1.5268177E13	5.8443035E13	790750139514	2.0109285E12	8.6456466E12
	3	7.6182448E14	1.8675974E13	7.3301616E13	1.675243E12	1.4157899E13	1.7610045E13
	4	7.6247432E14	1.8696761E13	8.4874742E13	2.0942131E12	1.9062055E13	1.8093304E13
	5	7.634095E14	1.9297821E13	8.5191129E13	2.4494406E12	2.0138792E13	1.8364127E13
	6	7.6343025E14	1.9400452E13	8.5733009E13	2.7356083E12	2.0725578E13	1.8394918E13
Registration_Fee	1	15527788.565	119490015.76	5292511.3027	3978302223.2	0.00000	0.00000
	2	21639867.185	133662227.70	32311119.052	4289030219.1	235911184.29	57921633.240
	3	23949608.354	155407201.30	174740952.76	4520081811.1	446193473.95	63252260.092
	4	24869238.261	185505587.03	179744493.46	4592767584.0	447422295.75	63751001.779
	5	29241333.376	188569711.82	239960424.48	4595044136.8	516825813.74	66432463.431
	6	29314853.798	190570120.51	260606794.74	4598922986.5	528365318.11	66697571.987
Overweight	1	791250.97361	257601134.76	15562917.639	3925281057.3	3609562963.4	0.00000
	2	44311390.088	260626777.46	16176007.913	4130893990.7	3683031841.5	38056746.067
	3	73006489.211	273269527.15	290072016.11	4290550498.2	3909292594.8	100926621.74
	4	98081862.833	274928086.44	422215616.38	4308566610.7	3925266824.1	152782366.97
	5	107532542.33	276245491.38	460786989.89	4308568955.5	3961477573.6	172317628.78
	6	116279782.21	276247388.73	560632861.79	4313110050.1	3983101014.4	198408360.82
Title_fee	1	828611112.00	721751956.65	880730370.21	4449995662.6	18152380768	801498457945
	2	3455233251.7	5774188045.0	3809859067.7	13713612464	23129755369	892923442492
	3	21583013897	10649083529	5075064459.8	45768202760	23162767817	913609491772
	4	40812262300	10749347884	9354699721.4	76492285801	24085312311	923476451638
	5	41336408268	10774941157	14390061707	80001536565	28080818091	924170462735
	6	42458587441	11021908961	14768556749	93239898810	28158700212	925742698531

Proportions of Prediction Error Covariances							
Lead	Variable	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
1	Gasoline_Gallons	1.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	Diesel_Gallons	0.40021	0.59979	0.00000	0.00000	0.00000	0.00000
	Total_Gallons_ST_Road_Tax	0.89885	0.02242	0.07873	0.00000	0.00000	0.00000
	Registration_Fee	0.00377	0.02901	0.00129	0.96593	0.00000	0.00000
	Overweight	0.00010	0.03299	0.00199	0.50267	0.46224	0.00000
	Title_fee	0.00100	0.00087	0.00107	0.00538	0.02196	0.96971
2	Gasoline_Gallons	0.97664	0.01120	0.00220	0.00005	0.00009	0.00981
	Diesel_Gallons	0.38562	0.57297	0.01090	0.00630	0.01343	0.01078
	Total_Gallons_ST_Road_Tax	0.89895	0.01812	0.06935	0.00094	0.00239	0.01026
	Registration_Fee	0.00454	0.02802	0.00677	0.89908	0.04945	0.01214
	Overweight	0.00542	0.03189	0.00198	0.50543	0.45063	0.00466
	Title_fee	0.00366	0.00612	0.00404	0.01455	0.02453	0.94709
3	Gasoline_Gallons	0.92203	0.01779	0.03273	0.00418	0.00218	0.02108
	Diesel_Gallons	0.34304	0.51572	0.06772	0.01183	0.02831	0.03337
	Total_Gallons_ST_Road_Tax	0.85864	0.02105	0.08262	0.00189	0.01596	0.01985
	Registration_Fee	0.00445	0.02887	0.03246	0.83960	0.08288	0.01175
	Overweight	0.00817	0.03058	0.03246	0.48008	0.43742	0.01129
	Title_fee	0.02116	0.01044	0.00498	0.04488	0.02271	0.89583
4	Gasoline_Gallons	0.89261	0.01738	0.06124	0.00509	0.00289	0.02079
	Diesel_Gallons	0.33633	0.50817	0.07407	0.01179	0.03444	0.03521
	Total_Gallons_ST_Road_Tax	0.84224	0.02065	0.09375	0.00231	0.02106	0.01999
	Registration_Fee	0.00453	0.03376	0.03272	0.83595	0.08144	0.01160
	Overweight	0.01068	0.02994	0.04598	0.46925	0.42750	0.01664
	Title_fee	0.03762	0.00991	0.00862	0.07050	0.02220	0.85115
5	Gasoline_Gallons	0.88709	0.01953	0.06110	0.00621	0.00429	0.02178

	<b>Diesel_Gallons</b>	0.33371	0.50057	0.08087	0.01161	0.03642	0.03682
	<b>Total_Gallons_ST_Road_Tax</b>	0.83997	0.02123	0.09373	0.00270	0.02216	0.02021
	<b>Registration_Fee</b>	0.00519	0.03346	0.04258	0.81529	0.09170	0.01179
	<b>Overweight</b>	0.01158	0.02975	0.04962	0.46394	0.42656	0.01855
	<b>Title_fee</b>	0.03762	0.00981	0.01310	0.07281	0.02556	0.84111
<b>6</b>	<b>Gasoline_Gallons</b>	0.88156	0.01979	0.06280	0.00723	0.00674	0.02187
	<b>Diesel_Gallons</b>	0.33172	0.49756	0.08545	0.01155	0.03638	0.03733
	<b>Total_Gallons_ST_Road_Tax</b>	0.83855	0.02131	0.09417	0.00300	0.02276	0.02020
	<b>Registration_Fee</b>	0.00517	0.03358	0.04593	0.81046	0.09311	0.01175
	<b>Overweight</b>	0.01231	0.02924	0.05934	0.45652	0.42159	0.02100
	<b>Title_fee</b>	0.03807	0.00988	0.01324	0.08359	0.02525	0.82997

Proportions of Prediction Error Covariances by Variable							
Variable	Lead	Gasoline_Gallons	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
<b>Gasoline_Gallons</b>	<b>1</b>	1.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	<b>2</b>	0.97664	0.01120	0.00220	0.00005	0.00009	0.00981
	<b>3</b>	0.92203	0.01779	0.03273	0.00418	0.00218	0.02108
	<b>4</b>	0.89261	0.01738	0.06124	0.00509	0.00289	0.02079
	<b>5</b>	0.88709	0.01953	0.06110	0.00621	0.00429	0.02178
	<b>6</b>	0.88156	0.01979	0.06280	0.00723	0.00674	0.02187
<b>Diesel_Gallons</b>	<b>1</b>	0.40021	0.59979	0.00000	0.00000	0.00000	0.00000
	<b>2</b>	0.38562	0.57297	0.01090	0.00630	0.01343	0.01078
	<b>3</b>	0.34304	0.51572	0.06772	0.01183	0.02831	0.03337
	<b>4</b>	0.33633	0.50817	0.07407	0.01179	0.03444	0.03521
	<b>5</b>	0.33371	0.50057	0.08087	0.01161	0.03642	0.03682
	<b>6</b>	0.33172	0.49756	0.08545	0.01155	0.03638	0.03733
<b>Total_Gallons_ST_Road_Tax</b>	<b>1</b>	0.89885	0.02242	0.07873	0.00000	0.00000	0.00000
	<b>2</b>	0.89895	0.01812	0.06935	0.00094	0.00239	0.01026
	<b>3</b>	0.85864	0.02105	0.08262	0.00189	0.01596	0.01985
	<b>4</b>	0.84224	0.02065	0.09375	0.00231	0.02106	0.01999
	<b>5</b>	0.83997	0.02123	0.09373	0.00270	0.02216	0.02021
	<b>6</b>	0.83855	0.02131	0.09417	0.00300	0.02276	0.02020
<b>Registration_Fee</b>	<b>1</b>	0.00377	0.02901	0.00129	0.96593	0.00000	0.00000
	<b>2</b>	0.00454	0.02802	0.00677	0.89908	0.04945	0.01214
	<b>3</b>	0.00445	0.02887	0.03246	0.83960	0.08288	0.01175
	<b>4</b>	0.00453	0.03376	0.03272	0.83595	0.08144	0.01160
	<b>5</b>	0.00519	0.03346	0.04258	0.81529	0.09170	0.01179
	<b>6</b>	0.00517	0.03358	0.04593	0.81046	0.09311	0.01175
<b>Overweight</b>	<b>1</b>	0.00010	0.03299	0.00199	0.50267	0.46224	0.00000
	<b>2</b>	0.00542	0.03189	0.00198	0.50543	0.45063	0.00466
	<b>3</b>	0.00817	0.03058	0.03246	0.48008	0.43742	0.01129
	<b>4</b>	0.01068	0.02994	0.04598	0.46925	0.42750	0.01664
	<b>5</b>	0.01158	0.02975	0.04962	0.46394	0.42656	0.01855
	<b>6</b>	0.01231	0.02924	0.05934	0.45652	0.42159	0.02100
<b>Title_fee</b>	<b>1</b>	0.00100	0.00087	0.00107	0.00538	0.02196	0.96971
	<b>2</b>	0.00366	0.00612	0.00404	0.01455	0.02453	0.94709
	<b>3</b>	0.02116	0.01044	0.00498	0.04488	0.02271	0.89583
	<b>4</b>	0.03762	0.00991	0.00862	0.07050	0.02220	0.85115
	<b>5</b>	0.03762	0.00981	0.01310	0.07281	0.02556	0.84111
	<b>6</b>	0.03807	0.00988	0.01324	0.08359	0.02525	0.82997

Forecasts					
				<b>Standard</b>	

Variable	Obs	Time	Forecast	Error	95% Confidence Limits	
<b>Gasoline_Gallons</b>	<b>132</b>	<b>JUL2020</b>	68371257.281	21789204.651	25665200.912	111077313.65
	<b>133</b>	<b>AUG2020</b>	80271534.565	25175811.319	30927851.098	129615218.03
	<b>134</b>	<b>SEP2020</b>	77961689.554	29117460.155	20892516.329	135030862.78
	<b>135</b>	<b>OCT2020</b>	74736501.914	31672819.676	12658916.060	136814087.77
	<b>136</b>	<b>NOV2020</b>	76835832.046	34648221.515	8926565.7480	144745098.34
<b>Diesel_Gallons</b>	<b>132</b>	<b>JUL2020</b>	3865452.2996	6217541.7861	-8320705.673	16051610.273
	<b>133</b>	<b>AUG2020</b>	5563606.2264	7707796.5024	-9543397.318	20670609.771
	<b>134</b>	<b>SEP2020</b>	5745985.4733	8641351.3724	-11190751.99	22682722.941
	<b>135</b>	<b>OCT2020</b>	4222050.7527	9528951.2432	-14454350.49	22898452.000
	<b>136</b>	<b>NOV2020</b>	4386284.1896	10410808.936	-16018526.38	24791094.754
<b>Total_Gallons_ST_Road_Tax</b>	<b>132</b>	<b>JUL2020</b>	78788987.065	26042302.975	27747011.159	129830962.97
	<b>133</b>	<b>AUG2020</b>	88023791.815	29821518.820	29574688.963	146472894.67
	<b>134</b>	<b>SEP2020</b>	86177023.636	34560540.501	18439608.968	153914438.30
	<b>135</b>	<b>OCT2020</b>	84601467.895	37715797.590	10679862.970	158523072.82
	<b>136</b>	<b>NOV2020</b>	85757356.327	41105717.287	5191630.8854	166323081.77
<b>Registration_Fee</b>	<b>132</b>	<b>JUL2020</b>	54627.16445	64176.41731	-71156.30214	180410.63103
	<b>133</b>	<b>AUG2020</b>	64643.58363	81163.75185	-94434.44684	223721.61409
	<b>134</b>	<b>SEP2020</b>	67078.02472	86983.26939	-103406.0505	237562.09999
	<b>135</b>	<b>OCT2020</b>	52112.67841	95784.91786	-135622.3109	239847.66767
	<b>136</b>	<b>NOV2020</b>	54664.03216	104616.43467	-150380.4120	259708.47630
<b>Overweight</b>	<b>132</b>	<b>JUL2020</b>	25829.27516	88367.41098	-147367.6678	199026.21810
	<b>133</b>	<b>AUG2020</b>	67610.46455	115017.17621	-157819.0584	293039.98752
	<b>134</b>	<b>SEP2020</b>	52197.34324	128598.87838	-199851.8268	304246.51332
	<b>135</b>	<b>OCT2020</b>	23657.99880	141840.32847	-254343.9365	301659.93415
	<b>136</b>	<b>NOV2020</b>	40675.77876	155367.47744	-263838.8814	345190.43892
<b>Title_fee</b>	<b>132</b>	<b>JUL2020</b>	1228259.5991	909138.01362	-553618.1646	3010137.3628
	<b>133</b>	<b>AUG2020</b>	1991579.7774	1107183.3461	-178459.7053	4161619.2600
	<b>134</b>	<b>SEP2020</b>	1768642.0287	1255854.0069	-692786.5947	4230070.6520
	<b>135</b>	<b>OCT2020</b>	1601399.7242	1381797.4303	-1106873.473	4309672.9215
	<b>136</b>	<b>NOV2020</b>	1785183.7218	1505823.5489	-1166176.201	4736543.6446

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**The SAS System****The VARMAX Procedure**

<b>Number of Observations</b>	130
<b>Number of Pairwise Missing</b>	0
<b>Observation(s) eliminated by differencing</b>	1

**Simple Summary Statistics**

<b>Variable</b>	<b>Type</b>	<b>N</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Min</b>	<b>Max</b>	<b>Difference</b>
<b>Diesel_Gallons</b>	<b>Dependent</b>	130	-6637.70769	6815673.1067	-29756024.00	19994713.000	1
<b>Total_Gallons_ST_Road_Tax</b>	<b>Dependent</b>	130	577877.29231	28563214.919	-109647055.0	72433169.000	1
<b>Registration_Fee</b>	<b>Dependent</b>	130	155.24231	71591.66847	-454443.0000	418695.50000	1
<b>Overweight</b>	<b>Dependent</b>	130	-114.84869	92220.07014	-452181.3100	616880.00000	1
<b>Title_fee</b>	<b>Dependent</b>	130	8781.43708	1003859.3366	-3775854.060	4557874.9700	1
<b>Gasoline_Gallons</b>	<b>Independent</b>	130	466427.53846	24198910.091	-80870462.00	64468230.000	1

## The SAS System

## The VARMAX Procedure

Type of Model	VARX(2,1)
Estimation Method	Least Squares Estimation

Constant Estimates	
Variable	Constant
Diesel_Gallons	-124096.6935
Total_Gallons_ST_Road_Tax	39474.89335
Registration_Fee	875.64104
Overweight	383.05605
Title_fee	16198.92080

Coefficient Estimates of Independent Variables		
Lag	Variable	Gasoline_Gallons
0	Diesel_Gallons	0.18036
	Total_Gallons_ST_Road_Tax	1.09805
	Registration_Fee	-0.00006
	Overweight	0.00018
	Title_fee	0.00227
1	Diesel_Gallons	0.21840
	Total_Gallons_ST_Road_Tax	0.39718
	Registration_Fee	0.00101
	Overweight	0.00085
	Title_fee	-0.00433

AR Coefficient Estimates						
Lag	Variable	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
1	Diesel_Gallons	-0.28237	-0.12378	18.94986	-11.45751	0.28637
	Total_Gallons_ST_Road_Tax	-0.02855	-0.41210	39.97280	-21.02425	0.13321
	Registration_Fee	0.00060	-0.00094	-0.54347	0.24524	-0.00759
	Overweight	-0.00167	-0.00063	-0.13017	-0.14328	-0.00601
	Title_fee	-0.02350	0.00730	1.17818	0.47866	-0.33789
2	Diesel_Gallons	-0.30317	0.03616	-5.27439	-1.90472	-0.44746
	Total_Gallons_ST_Road_Tax	0.02407	-0.06744	-19.27471	19.94693	0.68004
	Registration_Fee	-0.00017	0.00009	-0.23899	-0.08709	-0.00368
	Overweight	-0.00169	0.00013	0.06135	-0.31371	-0.01227
	Title_fee	0.01449	-0.00608	4.79124	-0.77214	-0.25288

Schematic Representation of Parameter Estimates					
Variable/Lag	C	XL0	XL1	AR1	AR2
Diesel_Gallons	.	+	+	—+..	—....
Total_Gallons_ST_Road_Tax	.	+	+	..+..	.....
Registration_Fee	.	.	.	..+.	.....
Overweight	.	.	.	.....	...*
Title_fee	.	.	.	....*	..+.*
+ is > 2*std error, - is < -2*std error, . is between, * is N/A					

Model Parameter Estimates						
Equation	Parameter	Estimate	Standard Error	t Value	Pr >  t	Variable
Diesel_Gallons	CONST1	-124096.6935	426834.75979	-0.29	0.7718	1
	XL0_1_1	0.18036	0.01970	9.16	0.0001	Gasoline_Gallons(t)

	XL1_1_1	0.21840	0.05769	3.79	0.0002	Gasoline_Gallons(t-1)
	AR1_1_1	-0.28237	0.09609	-2.94	0.0040	Diesel_Gallons(t-1)
	AR1_1_2	-0.12378	0.05475	-2.26	0.0256	Total_Gallons_ST_Road_Tax(t-1)
	AR1_1_3	18.94986	9.46682	2.00	0.0477	Registration_Fee(t-1)
	AR1_1_4	-11.45751	7.04796	-1.63	0.1068	Overweight(t-1)
	AR1_1_5	0.28637	0.45591	0.63	0.5312	Title_fee(t-1)
	AR2_1_1	-0.30317	0.09707	-3.12	0.0023	Diesel_Gallons(t-2)
	AR2_1_2	0.03616	0.02432	1.49	0.1398	Total_Gallons_ST_Road_Tax(t-2)
	AR2_1_3	-5.27439	9.59535	-0.55	0.5836	Registration_Fee(t-2)
	AR2_1_4	-1.90472	7.16475	-0.27	0.7908	Overweight(t-2)
	AR2_1_5	-0.44746	0.46282	-0.97	0.3357	Title_fee(t-2)
Total_Gallons_ST_Road_Tax	CONST2	39474.89335	769461.64793	0.05	0.9592	1
	XL0_2_1	1.09805	0.03551	30.93	0.0001	Gasoline_Gallons(t)
	XL1_2_1	0.39718	0.10400	3.82	0.0002	Gasoline_Gallons(t-1)
	AR1_2_1	-0.02855	0.17322	-0.16	0.8694	Diesel_Gallons(t-1)
	AR1_2_2	-0.41210	0.09869	-4.18	0.0001	Total_Gallons_ST_Road_Tax(t-1)
	AR1_2_3	39.97280	17.06598	2.34	0.0209	Registration_Fee(t-1)
	AR1_2_4	-21.02425	12.70546	-1.65	0.1007	Overweight(t-1)
	AR1_2_5	0.13321	0.82187	0.16	0.8715	Title_fee(t-1)
	AR2_2_1	0.02407	0.17498	0.14	0.8908	Diesel_Gallons(t-2)
	AR2_2_2	-0.06744	0.04385	-1.54	0.1268	Total_Gallons_ST_Road_Tax(t-2)
	AR2_2_3	-19.27471	17.29768	-1.11	0.2675	Registration_Fee(t-2)
	AR2_2_4	19.94693	12.91601	1.54	0.1252	Overweight(t-2)
	AR2_2_5	0.68004	0.83432	0.82	0.4167	Title_fee(t-2)
Registration_Fee	CONST3	875.64104	5733.89331	0.15	0.8789	1
	XL0_3_1	-0.00006	0.00026	-0.22	0.8234	Gasoline_Gallons(t)
	XL1_3_1	0.00101	0.00077	1.30	0.1968	Gasoline_Gallons(t-1)
	AR1_3_1	0.00060	0.00129	0.46	0.6436	Diesel_Gallons(t-1)
	AR1_3_2	-0.00094	0.00074	-1.27	0.2061	Total_Gallons_ST_Road_Tax(t-1)
	AR1_3_3	-0.54347	0.12717	-4.27	0.0001	Registration_Fee(t-1)
	AR1_3_4	0.24524	0.09468	2.59	0.0108	Overweight(t-1)
	AR1_3_5	-0.00759	0.00612	-1.24	0.2180	Title_fee(t-1)
	AR2_3_1	-0.00017	0.00130	-0.13	0.8990	Diesel_Gallons(t-2)
	AR2_3_2	0.00009	0.00033	0.29	0.7742	Total_Gallons_ST_Road_Tax(t-2)
	AR2_3_3	-0.23899	0.12890	-1.85	0.0663	Registration_Fee(t-2)
	AR2_3_4	-0.08709	0.09625	-0.90	0.3674	Overweight(t-2)
	AR2_3_5	-0.00368	0.00622	-0.59	0.5555	Title_fee(t-2)
Overweight	CONST4	383.05605	7961.23461	0.05	0.9617	1
	XL0_4_1	0.00018	0.00037	0.48	0.6323	Gasoline_Gallons(t)
	XL1_4_1	0.00085	0.00108	0.79	0.4308	Gasoline_Gallons(t-1)
	AR1_4_1	-0.00167	0.00179	-0.93	0.3543	Diesel_Gallons(t-1)
	AR1_4_2	-0.00063	0.00102	-0.62	0.5384	Total_Gallons_ST_Road_Tax(t-1)
	AR1_4_3	-0.13017	0.17657	-0.74	0.4625	Registration_Fee(t-1)
	AR1_4_4	-0.14328	0.13146	-1.09	0.2780	Overweight(t-1)
	AR1_4_5	-0.00601	0.00850	-0.71	0.4811	Title_fee(t-1)
	AR2_4_1	-0.00169	0.00181	-0.93	0.3519	Diesel_Gallons(t-2)
	AR2_4_2	0.00013	0.00045	0.28	0.7791	Total_Gallons_ST_Road_Tax(t-2)
	AR2_4_3	0.06135	0.17897	0.34	0.7324	Registration_Fee(t-2)
	AR2_4_4	-0.31371	0.13364	-2.35	0.0206	Overweight(t-2)
	AR2_4_5	-0.01227	0.00863	-1.42	0.1578	Title_fee(t-2)
Title_fee	CONST5	16198.92080	80788.56262	0.20	0.8414	1
	XL0_5_1	0.00227	0.00373	0.61	0.5436	Gasoline_Gallons(t)

	<b>XL1_5_1</b>	-0.00433	0.01092	-0.40	0.6924	Gasoline_Gallons(t-1)
	<b>AR1_5_1</b>	-0.02350	0.01819	-1.29	0.1989	Diesel_Gallons(t-1)
	<b>AR1_5_2</b>	0.00730	0.01036	0.70	0.4827	Total_Gallons_ST_Road_Tax(t-1)
	<b>AR1_5_3</b>	1.17818	1.79182	0.66	0.5122	Registration_Fee(t-1)
	<b>AR1_5_4</b>	0.47866	1.33399	0.36	0.7204	Overweight(t-1)
	<b>AR1_5_5</b>	-0.33789	0.08629	-3.92	0.0002	Title_fee(t-1)
	<b>AR2_5_1</b>	0.01449	0.01837	0.79	0.4319	Diesel_Gallons(t-2)
	<b>AR2_5_2</b>	-0.00608	0.00460	-1.32	0.1889	Total_Gallons_ST_Road_Tax(t-2)
	<b>AR2_5_3</b>	4.79124	1.81615	2.64	0.0095	Registration_Fee(t-2)
	<b>AR2_5_4</b>	-0.77214	1.35610	-0.57	0.5702	Overweight(t-2)
	<b>AR2_5_5</b>	-0.25288	0.08760	-2.89	0.0047	Title_fee(t-2)

Covariances of Innovations					
Variable	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
<b>Diesel_Gallons</b>	2.3186717E13	1.8809288E13	-52744467472	-77477719631	-1.302095E11
<b>Total_Gallons_ST_Road_Tax</b>	1.8809288E13	7.5351804E13	-82845386885	-1.331779E11	-70675941953
<b>Registration_Fee</b>	-52744467472	-82845386885	4184262403.8	4281056642.0	5066798748.9
<b>Overweight</b>	-77477719631	-1.331779E11	4281056642.0	8066414631.2	-2470147355
<b>Title_fee</b>	-1.302095E11	-70675941953	5066798748.9	-2470147355	830652658729

<b>Log-likelihood</b>	-8865.28
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Information Criteria	
<b>AICC</b>	18166.3
<b>HQC</b>	17983.25
<b>AIC</b>	17890.55
<b>SBC</b>	18118.71
<b>FPEC</b>	2.689E58

Cross Covariances of Residuals						
Lag	Variable	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee
<b>0</b>	<b>Diesel_Gallons</b>	2.0831816E13	1.689897E13	-47387607494	-69608888731	-1.169851E11
	<b>Total_Gallons_ST_Road_Tax</b>	1.689897E13	6.7698886E13	-74431402279	-1.196521E11	-63497916598
	<b>Registration_Fee</b>	-47387607494	-74431402279	3759298253.5	3846261826.8	4552202001.0
	<b>Overweight</b>	-69608888731	-1.196521E11	3846261826.8	7247169395.3	-2219273014
	<b>Title_fee</b>	-1.169851E11	-63497916598	4552202001.0	-2219273014	746289498077
<b>1</b>	<b>Diesel_Gallons</b>	-2.142119E12	-4.61663E12	12914510837	13375300949	-12456576556
	<b>Total_Gallons_ST_Road_Tax</b>	-6.730231E11	-8.409946E12	27868869324	46329329990	119639752859
	<b>Registration_Fee</b>	-11919025232	-11069142856	-132628446.1	-105652694.7	613801492.67
	<b>Overweight</b>	-20136187560	-2669866075	-130128756.2	-268291470.9	-1647133669
	<b>Title_fee</b>	176694059681	181498915761	-1909883405	-1557848635	-67174672103
<b>2</b>	<b>Diesel_Gallons</b>	-7.966191E11	-4.023093E12	14352027068	14438405496	109283619174
	<b>Total_Gallons_ST_Road_Tax</b>	-1.862308E12	-1.637804E13	48279974685	86653611579	134475980130
	<b>Registration_Fee</b>	12500917050	14087949679	-584971249.8	-512834608.7	-2191794437
	<b>Overweight</b>	-3375482948	-8330770362	-194652259.3	-517527294.9	-2220969887
	<b>Title_fee</b>	-3.791698E11	-4.113653E11	4596917100.9	3230054185.3	-74770424612
<b>3</b>	<b>Diesel_Gallons</b>	-3.35056E12	-2.540863E12	17483848471	40268964.623	-1.83163E11
	<b>Total_Gallons_ST_Road_Tax</b>	-2.010207E12	-1.453319E12	-20225392235	-23362638260	-9.074041E11
	<b>Registration_Fee</b>	-20458997473	34443028191	-815078167.2	-781692676.7	1689790477.6
	<b>Overweight</b>	13647666340	95558843248	-654634707.7	-1189249902	3680992177.8
	<b>Title_fee</b>	185312975231	138013944604	-9306464127	-4749525796	-1.771605E11

Cross Correlations of Residuals						
Lag	Variable	Diesel_Gallons	Total_Gallons_ST_Road_Tax	Registration_Fee	Overweight	Title_fee



0	Diesel_Gallons	1.00000	0.44999	-0.16934	-0.17915	-0.02967
	Total_Gallons_ST_Road_Tax	0.44999	1.00000	-0.14754	-0.17082	-0.00893
	Registration_Fee	-0.16934	-0.14754	1.00000	0.73689	0.08594
	Overweight	-0.17915	-0.17082	0.73689	1.00000	-0.03018
	Title_fee	-0.02967	-0.00893	0.08594	-0.03018	1.00000
1	Diesel_Gallons	-0.10283	-0.12293	0.04615	0.03442	-0.00316
	Total_Gallons_ST_Road_Tax	-0.01792	-0.12423	0.05524	0.06614	0.01683
	Registration_Fee	-0.04259	-0.02194	-0.03528	-0.02024	0.01159
	Overweight	-0.05182	-0.00381	-0.02493	-0.03702	-0.02240
	Title_fee	0.04481	0.02553	-0.03606	-0.02118	-0.09001
2	Diesel_Gallons	-0.03824	-0.10713	0.05129	0.03716	0.02772
	Total_Gallons_ST_Road_Tax	-0.04959	-0.24192	0.09570	0.12371	0.01892
	Registration_Fee	0.04467	0.02793	-0.15561	-0.09825	-0.04138
	Overweight	-0.00869	-0.01189	-0.03729	-0.07141	-0.03020
	Title_fee	-0.09616	-0.05787	0.08679	0.04392	-0.10019
3	Diesel_Gallons	-0.16084	-0.06766	0.06248	0.00010	-0.04645
	Total_Gallons_ST_Road_Tax	-0.05353	-0.02147	-0.04009	-0.03335	-0.12766
	Registration_Fee	-0.07311	0.06827	-0.21682	-0.14976	0.03190
	Overweight	0.03512	0.13643	-0.12542	-0.16410	0.05005
	Title_fee	0.04700	0.01942	-0.17570	-0.06458	-0.23739

Schematic Representation of Cross Correlations of Residuals				
Variable/Lag	0	1	2	3
Diesel_Gallons	++ . - .	.....	.....	.....
Total_Gallons_ST_Road_Tax	++ . . .	.....	. - . . .	.....
Registration_Fee	. . ++ .	.....	.....	. - . . .
Overweight	- . ++ .	.....	.....	.....
Title_fee	. . . . +	.....	.....	. . . . -
+ is > 2*std error, - is < -2*std error, . is between				

Portmanteau Test for Cross Correlations of Residuals			
Up To Lag	DF	Chi-Square	Pr > ChiSq
3	25	64.46	<.0001

Univariate Model ANOVA Diagnostics				
Variable	R-Square	Standard Deviation	F Value	Pr > F
Diesel_Gallons	0.5550	4815258.7370	11.95	<.0001
Total_Gallons_ST_Road_Tax	0.9173	8680541.6805	106.30	<.0001
Registration_Fee	0.2713	64685.87484	3.57	0.0002
Overweight	0.1530	89813.22080	1.73	0.0689
Title_fee	0.2634	911401.48054	3.43	0.0003

Univariate Model White Noise Diagnostics					
Variable	Durbin Watson	Normality		ARCH	
		Chi-Square	Pr > ChiSq	F Value	Pr > F
Diesel_Gallons	2.20219	9.84	0.0073	0.42	0.5192
Total_Gallons_ST_Road_Tax	2.24447	0.06	0.9687	0.09	0.7673
Registration_Fee	2.06532	1590.03	<.0001	0.44	0.5101
Overweight	2.07258	1860.87	<.0001	0.02	0.8803
Title_fee	2.16964	135.43	<.0001	0.47	0.4963

Univariate Model AR Diagnostics				
	AR1	AR2	AR3	AR4

Variable	F Value	Pr > F	F Value	Pr > F	F Value	Pr > F	F Value	Pr > F
Diesel_Gallons	1.34	0.2491	0.82	0.4420	1.90	0.1333	1.40	0.2375
Total_Gallons_ST_Road_Tax	1.97	0.1632	5.59	0.0047	4.09	0.0084	3.05	0.0196
Registration_Fee	0.16	0.6931	1.65	0.1959	3.50	0.0177	4.84	0.0012
Overweight	0.17	0.6793	0.41	0.6621	1.50	0.2188	2.79	0.0297
Title_fee	1.03	0.3119	1.27	0.2843	4.03	0.0090	4.06	0.0040