

Yang, Kun 301178299

*Assignment 4 Part 3 - Snappers
Temperature dataset*

Obs	City	Temp
1	Winnipeg	-35C
2	Seattle	15F
3	Vancouver	8C
4	Maui	85F
5	Taipei	23C
6	LosAngeles	85F

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*Assignment 4 Part 3 - Snappers
Temperature dataset*

Obs	City	Temp	type	newTemp
1	Winnipeg	-35C	C	-35
2	Seattle	15F	F	15
3	Vancouver	8C	C	8
4	Maui	85F	F	85
5	Taipei	23C	C	23
6	LosAngeles	85F	F	85

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Assignment 4 Part 3 - Snappers
Temperature dataset

Obs	City	Temp	type	degrees_celsius
1	Winnipeg	-35C	C	-35.0
2	Seattle	15F	F	-9.4
3	Vancouver	8C	C	8.0
4	Maui	85F	F	29.4
5	Taipei	23C	C	23.0
6	LosAngeles	85F	F	29.4

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*Assignment 4 Part 3 - Snappers
Dataset of Question 2*

Obs	make	model	miles_per_gallon	weight	price
1	AMC	Concord	22	2930	4099
2	AMC	Pacer	17	3350	4749
3	AMC	Spirit	22	2640	3799
4	Buick	Century	20	3250	4816
5	Buick	Electra	15	4080	7827

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*Assignment 4 Part 3 - Snappers
few records of the accidents data*

Obs	AccidentId	Accident_Severity	AccidentDate	fatal	month
1	201001BS70003	3	2010-01-11	no	1
2	201001BS70004	3	2010-01-11	no	1
3	201001BS70006	3	2010-01-12	no	1
4	201001BS70007	3	2010-01-02	no	1
5	201001BS70008	3	2010-01-04	no	1
6	201001BS70009	3	2010-01-18	no	1
7	201001BS70010	3	2010-01-03	no	1
8	201001BS70011	3	2010-01-04	no	1
9	201001BS70012	3	2010-01-04	no	1
10	201001BS70013	3	2010-01-04	no	1

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summary of codes used*

	fatal	
	no	yes
	N	N
Accident_Severity		
1	.	1731
2	20440	.
3	132243	.

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examine if fatality rate is the same across different months

The GENMOD Procedure

Model Information	
Data Set	WORK.ACCIDENT_INFO
Distribution	Binomial
Link Function	Logit
Dependent Variable	fatal

Number of Observations Read	154414
Number of Observations Used	154414
Number of Events	1731
Number of Trials	154414

Class Level Information		
Class	Levels	Values
month	12	1 2 3 4 5 6 7 8 9 10 11 12

Response Profile		
Ordered Value	fatal	Total Frequency
1	yes	1731
2	no	152683

PROC GENMOD is modeling the probability that fatal='yes'.

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The GENMOD Procedure

Parameter Information		
Parameter	Effect	month
Prm1	Intercept	
Prm2	month	1
Prm3	month	2
Prm4	month	3
Prm5	month	4
Prm6	month	5
Prm7	month	6
Prm8	month	7
Prm9	month	8
Prm10	month	9
Prm11	month	10
Prm12	month	11
Prm13	month	12

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Log Likelihood		-9485.5231	
Full Log Likelihood		-9485.5231	
AIC (smaller is better)		18995.0463	
AICC (smaller is better)		18995.0483	
BIC (smaller is better)		19114.4150	

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The GENMOD Procedure

Algorithm converged.

Analysis Of Maximum Likelihood Parameter Estimates								
Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept		1	-4.5705	0.0976	-4.7619	-4.3792	2191.61	<.0001
month	1	1	0.0973	0.1340	-0.1654	0.3599	0.53	0.4680
month	2	1	0.0482	0.1325	-0.2115	0.3079	0.13	0.7159
month	3	1	0.0082	0.1302	-0.2470	0.2635	0.00	0.9495
month	4	1	-0.0121	0.1330	-0.2727	0.2485	0.01	0.9272
month	5	1	0.1934	0.1253	-0.0522	0.4390	2.38	0.1228
month	6	1	0.0912	0.1270	-0.1578	0.3402	0.52	0.4730
month	7	1	-0.0417	0.1309	-0.2982	0.2148	0.10	0.7500
month	8	1	0.3304	0.1225	0.0902	0.5706	7.27	0.0070
month	9	1	0.1423	0.1253	-0.1033	0.3879	1.29	0.2561
month	10	1	0.1412	0.1244	-0.1027	0.3851	1.29	0.2566
month	11	1	0.0066	0.1275	-0.2434	0.2566	0.00	0.9588
month	12	0	0.0000	0.0000	0.0000	0.0000	.	.
Scale		0	1.0000	0.0000	1.0000	1.0000		

Note: The scale parameter was held fixed.

LR Statistics For Type 3 Analysis			
Source	DF	Chi-Square	Pr > ChiSq
month	11	19.10	0.0593

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The GENMOD Procedure

month Least Squares Means											
month	Estimate	Standard Error	z Value	Pr > z	Alpha	Lower	Upper	Mean	Standard Error of Mean	Lower Mean	Upper Mean
1	-4.4733	0.09181	-48.72	<.0001	0.05	-4.6532	-4.2933	0.01128	0.001024	0.009441	0.01348
2	-4.5223	0.08957	-50.49	<.0001	0.05	-4.6979	-4.3468	0.01075	0.000952	0.009032	0.01278
3	-4.5623	0.08620	-52.93	<.0001	0.05	-4.7312	-4.3933	0.01033	0.000881	0.008739	0.01221
4	-4.5827	0.09026	-50.77	<.0001	0.05	-4.7596	-4.4058	0.01012	0.000905	0.008496	0.01206
5	-4.3771	0.07858	-55.71	<.0001	0.05	-4.5311	-4.2231	0.01241	0.000963	0.01065	0.01444
6	-4.4793	0.08130	-55.09	<.0001	0.05	-4.6387	-4.3200	0.01121	0.000901	0.009578	0.01313
7	-4.6122	0.08714	-52.93	<.0001	0.05	-4.7830	-4.4414	0.009832	0.000848	0.008301	0.01164
8	-4.2401	0.07405	-57.26	<.0001	0.05	-4.3853	-4.0950	0.01420	0.001037	0.01231	0.01638
9	-4.4282	0.07855	-56.37	<.0001	0.05	-4.5822	-4.2742	0.01180	0.000916	0.01013	0.01373
10	-4.4293	0.07715	-57.41	<.0001	0.05	-4.5806	-4.2781	0.01178	0.000898	0.01015	0.01368
11	-4.5639	0.08207	-55.61	<.0001	0.05	-4.7248	-4.4031	0.01031	0.000838	0.008795	0.01209
12	-4.5705	0.09763	-46.81	<.0001	0.05	-4.7619	-4.3792	0.01025	0.000990	0.008477	0.01238

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The GENMOD Procedure

Differences of month Least Squares Means											
month	_month	Estimate	Standard Error	z Value	Pr > z	Alpha	Lower	Upper	Odds Ratio	Lower Confidence Limit for Odds Ratio	Upper Confidence Limit for Odds Ratio
1	2	0.04905	0.1283	0.38	0.7022	0.05	-0.2023	0.3004	1.050	0.817	1.350
1	3	0.08902	0.1259	0.71	0.4796	0.05	-0.1578	0.3358	1.093	0.854	1.399
1	4	0.1094	0.1287	0.85	0.3955	0.05	-0.1429	0.3617	1.116	0.867	1.436
1	5	-0.09612	0.1208	-0.80	0.4264	0.05	-0.3330	0.1407	0.908	0.717	1.151
1	6	0.006084	0.1226	0.05	0.9604	0.05	-0.2343	0.2464	1.006	0.791	1.279
1	7	0.1390	0.1266	1.10	0.2723	0.05	-0.1091	0.3870	1.149	0.897	1.473
1	8	-0.2331	0.1179	-1.98	0.0481	0.05	-0.4643	-0.00196	0.792	0.629	0.998
1	9	-0.04506	0.1208	-0.37	0.7092	0.05	-0.2819	0.1918	0.956	0.754	1.211
1	10	-0.04391	0.1199	-0.37	0.7142	0.05	-0.2790	0.1911	0.957	0.757	1.211
1	11	0.09067	0.1231	0.74	0.4615	0.05	-0.1507	0.3320	1.095	0.860	1.394
1	12	0.09726	0.1340	0.73	0.4680	0.05	-0.1654	0.3599	1.102	0.848	1.433
2	3	0.03997	0.1243	0.32	0.7478	0.05	-0.2037	0.2836	1.041	0.816	1.328
2	4	0.06035	0.1272	0.47	0.6350	0.05	-0.1889	0.3096	1.062	0.828	1.363
2	5	-0.1452	0.1192	-1.22	0.2231	0.05	-0.3787	0.08836	0.865	0.685	1.092
2	6	-0.04297	0.1210	-0.36	0.7224	0.05	-0.2801	0.1941	0.958	0.756	1.214
2	7	0.08991	0.1250	0.72	0.4719	0.05	-0.1550	0.3348	1.094	0.856	1.398
2	8	-0.2822	0.1162	-2.43	0.0152	0.05	-0.5100	-0.05441	0.754	0.601	0.947
2	9	-0.09411	0.1191	-0.79	0.4296	0.05	-0.3276	0.1394	0.910	0.721	1.150
2	10	-0.09296	0.1182	-0.79	0.4317	0.05	-0.3247	0.1387	0.911	0.723	1.149
2	11	0.04163	0.1215	0.34	0.7319	0.05	-0.1965	0.2797	1.043	0.822	1.323
2	12	0.04821	0.1325	0.36	0.7159	0.05	-0.2115	0.3079	1.049	0.809	1.361

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Differences of month Least Squares Means											
month	_month	Estimate	Standard Error	z Value	Pr > z	Alpha	Lower	Upper	Odds Ratio	Lower Confidence Limit for Odds Ratio	Upper Confidence Limit for Odds Ratio
3	4	0.02038	0.1248	0.16	0.8703	0.05	-0.2242	0.2650	1.021	0.799	1.303
3	5	-0.1851	0.1166	-1.59	0.1124	0.05	-0.4137	0.04346	0.831	0.661	1.044
3	6	-0.08294	0.1185	-0.70	0.4840	0.05	-0.3152	0.1493	0.920	0.730	1.161
3	7	0.04993	0.1226	0.41	0.6837	0.05	-0.1903	0.2902	1.051	0.827	1.337
3	8	-0.3222	0.1136	-2.84	0.0046	0.05	-0.5449	-0.09944	0.725	0.580	0.905
3	9	-0.1341	0.1166	-1.15	0.2503	0.05	-0.3626	0.09449	0.875	0.696	1.099
3	10	-0.1329	0.1157	-1.15	0.2505	0.05	-0.3597	0.09380	0.876	0.698	1.098
3	11	0.001653	0.1190	0.01	0.9889	0.05	-0.2316	0.2349	1.002	0.793	1.265
3	12	0.008242	0.1302	0.06	0.9495	0.05	-0.2470	0.2635	1.008	0.781	1.301
4	5	-0.2055	0.1197	-1.72	0.0859	0.05	-0.4401	0.02903	0.814	0.644	1.029
4	6	-0.1033	0.1215	-0.85	0.3950	0.05	-0.3414	0.1348	0.902	0.711	1.144
4	7	0.02955	0.1255	0.24	0.8138	0.05	-0.2163	0.2755	1.030	0.805	1.317
4	8	-0.3425	0.1167	-2.93	0.0033	0.05	-0.5714	-0.1137	0.710	0.565	0.893
4	9	-0.1545	0.1197	-1.29	0.1967	0.05	-0.3890	0.08006	0.857	0.678	1.083
4	10	-0.1533	0.1187	-1.29	0.1966	0.05	-0.3860	0.07941	0.858	0.680	1.083
4	11	-0.01873	0.1220	-0.15	0.8780	0.05	-0.2578	0.2204	0.981	0.773	1.247
4	12	-0.01214	0.1330	-0.09	0.9272	0.05	-0.2727	0.2485	0.988	0.761	1.282
5	6	0.1022	0.1131	0.90	0.3660	0.05	-0.1194	0.3238	1.108	0.887	1.382
5	7	0.2351	0.1173	2.00	0.0451	0.05	0.005103	0.4650	1.265	1.005	1.592
5	8	-0.1370	0.1080	-1.27	0.2044	0.05	-0.3486	0.07460	0.872	0.706	1.077
5	9	0.05106	0.1111	0.46	0.6458	0.05	-0.1667	0.2688	1.052	0.846	1.308

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The GENMOD Procedure

Differences of month Least Squares Means											
month	_month	Estimate	Standard Error	z Value	Pr > z	Alpha	Lower	Upper	Odds Ratio	Lower Confidence Limit for Odds Ratio	Upper Confidence Limit for Odds Ratio
5	10	0.05221	0.1101	0.47	0.6354	0.05	-0.1636	0.2680	1.054	0.849	1.307
5	11	0.1868	0.1136	1.64	0.1002	0.05	-0.03590	0.4095	1.205	0.965	1.506
5	12	0.1934	0.1253	1.54	0.1228	0.05	-0.05224	0.4390	1.213	0.949	1.551
6	7	0.1329	0.1192	1.11	0.2649	0.05	-0.1007	0.3665	1.142	0.904	1.443
6	8	-0.2392	0.1100	-2.18	0.0296	0.05	-0.4548	-0.02368	0.787	0.635	0.977
6	9	-0.05114	0.1131	-0.45	0.6510	0.05	-0.2727	0.1704	0.950	0.761	1.186
6	10	-0.05000	0.1121	-0.45	0.6556	0.05	-0.2697	0.1697	0.951	0.764	1.185
6	11	0.08459	0.1155	0.73	0.4640	0.05	-0.1418	0.3110	1.088	0.868	1.365
6	12	0.09118	0.1270	0.72	0.4730	0.05	-0.1578	0.3402	1.095	0.854	1.405
7	8	-0.3721	0.1144	-3.25	0.0011	0.05	-0.5962	-0.1480	0.689	0.551	0.862
7	9	-0.1840	0.1173	-1.57	0.1168	0.05	-0.4140	0.04593	0.832	0.661	1.047
7	10	-0.1829	0.1164	-1.57	0.1161	0.05	-0.4110	0.04525	0.833	0.663	1.046
7	11	-0.04828	0.1197	-0.40	0.6867	0.05	-0.2829	0.1863	0.953	0.754	1.205
7	12	-0.04169	0.1309	-0.32	0.7500	0.05	-0.2982	0.2148	0.959	0.742	1.240
8	9	0.1881	0.1080	1.74	0.0815	0.05	-0.02350	0.3997	1.207	0.977	1.491
8	10	0.1892	0.1069	1.77	0.0768	0.05	-0.02037	0.3988	1.208	0.980	1.490
8	11	0.3238	0.1105	2.93	0.0034	0.05	0.1072	0.5405	1.382	1.113	1.717
8	12	0.3304	0.1225	2.70	0.0070	0.05	0.09023	0.5706	1.392	1.094	1.769
9	10	0.001145	0.1101	0.01	0.9917	0.05	-0.2147	0.2169	1.001	0.807	1.242
9	11	0.1357	0.1136	1.19	0.2322	0.05	-0.08693	0.3584	1.145	0.917	1.431
9	12	0.1423	0.1253	1.14	0.2561	0.05	-0.1033	0.3879	1.153	0.902	1.474

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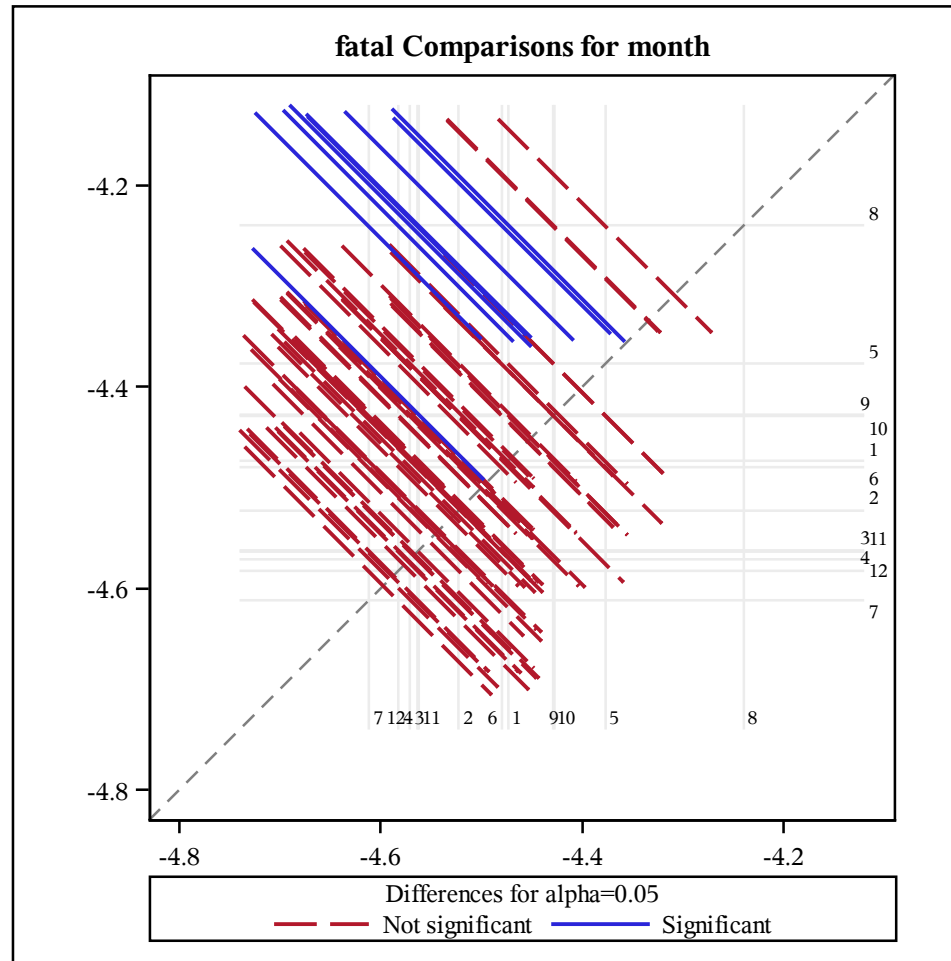
The GENMOD Procedure

Differences of month Least Squares Means											
month	_month	Estimate	Standard Error	z Value	Pr > z	Alpha	Lower	Upper	Odds Ratio	Lower Confidence Limit for Odds Ratio	Upper Confidence Limit for Odds Ratio
10	11	0.1346	0.1126	1.19	0.2322	0.05	-0.08619	0.3554	1.144	0.917	1.427
10	12	0.1412	0.1244	1.13	0.2566	0.05	-0.1027	0.3851	1.152	0.902	1.470
11	12	0.006589	0.1275	0.05	0.9588	0.05	-0.2434	0.2566	1.007	0.784	1.292

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The GENMOD Procedure



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Assignment 4 Part 3 - Snappers
Estimated probability of fatality by months

Obs	StmntNo	Effect	month	Estimate	StdErr	zValue	Probz	Alpha	Lower	Upper	Mu	StdErrMu	LowerMu	UpperMu
1	1	month	1	-4.4733	0.09181	-48.72	<.0001	0.05	-4.6532	-4.2933	0.01128	0.001024	0.009441	0.01348
2	1	month	2	-4.5223	0.08957	-50.49	<.0001	0.05	-4.6979	-4.3468	0.01075	0.000952	0.009032	0.01278
3	1	month	3	-4.5623	0.08620	-52.93	<.0001	0.05	-4.7312	-4.3933	0.01033	0.000881	0.008739	0.01221
4	1	month	4	-4.5827	0.09026	-50.77	<.0001	0.05	-4.7596	-4.4058	0.01012	0.000905	0.008496	0.01206
5	1	month	5	-4.3771	0.07858	-55.71	<.0001	0.05	-4.5311	-4.2231	0.01241	0.000963	0.01065	0.01444
6	1	month	6	-4.4793	0.08130	-55.09	<.0001	0.05	-4.6387	-4.3200	0.01121	0.000901	0.009578	0.01313
7	1	month	7	-4.6122	0.08714	-52.93	<.0001	0.05	-4.7830	-4.4414	0.009832	0.000848	0.008301	0.01164
8	1	month	8	-4.2401	0.07405	-57.26	<.0001	0.05	-4.3853	-4.0950	0.01420	0.001037	0.01231	0.01638
9	1	month	9	-4.4282	0.07855	-56.37	<.0001	0.05	-4.5822	-4.2742	0.01180	0.000916	0.01013	0.01373
10	1	month	10	-4.4293	0.07715	-57.41	<.0001	0.05	-4.5806	-4.2781	0.01178	0.000898	0.01015	0.01368
11	1	month	11	-4.5639	0.08207	-55.61	<.0001	0.05	-4.7248	-4.4031	0.01031	0.000838	0.008795	0.01209
12	1	month	12	-4.5705	0.09763	-46.81	<.0001	0.05	-4.7619	-4.3792	0.01025	0.000990	0.008477	0.01238

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Assignment 4 Part 3 - Snappers

Estimated probability of fatality by months along with 95% ci

