

**POISSON REGRESSION****The GENMOD Procedure**

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*Model Information*

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<i>Data Set</i>	WORK.ONE
<i>Distribution</i>	Poisson
<i>Link Function</i>	Log
<i>Dependent Variable</i>	infantdth
<i>Offset Variable</i>	logbirths

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*Number of Observations Read* 50

*Number of Observations Used* 50

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*Class Level Information*

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<i>Class</i>	<i>Value</i>	<i>Design Variables</i>		
<i>region</i>	MIDWEST	1	0	0
	NORTHEAST	0	0	0
	SOUTH	0	1	0
	WEST	0	0	1

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*Parameter Information*

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<i>Parameter</i>	<i>Effect</i>	<i>region</i>
<i>Prm1</i>	Intercept	
<i>Prm2</i>	poverty	
<i>Prm3</i>	region	MIDWEST
<i>Prm4</i>	region	SOUTH
<i>Prm5</i>	region	WEST
<i>Prm6</i>	pnc	

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*Criteria For Assessing Goodness Of Fit*

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<i>Criterion</i>	<i>DF</i>	<i>Value</i>	<i>Value/DF</i>
<i>Deviance</i>	44	504.5563	11.4672
<i>Scaled Deviance</i>	44	504.5563	11.4672
<i>Pearson Chi-Square</i>	44	501.1190	11.3891
<i>Scaled Pearson X2</i>	44	501.1190	11.3891
<i>Log Likelihood</i>		158224.2439	
<i>Full Log Likelihood</i>		-443.5881	
<i>AIC (smaller is better)</i>		899.1761	
<i>AICC (smaller is better)</i>		901.1296	
<i>BIC (smaller is better)</i>		910.6483	

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**POISSON REGRESSION****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	-5.1186	0.0393	-5.1956	-5.0417	16981.4	<.0001	
poverty	1	0.0102	0.0023	0.0057	0.0148	19.10	<.0001	
region	MIDWEST	1	0.1358	0.0202	0.0962	0.1753	45.28	<.0001
region	SOUTH	1	0.1657	0.0192	0.1282	0.2033	74.78	<.0001
region	WEST	1	-0.1522	0.0208	-0.1930	-0.1114	53.40	<.0001
pnc	1	-0.0057	0.0022	-0.0099	-0.0014	6.89	0.0087	
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
poverty	1	19.14	<.0001
region	3	432.13	<.0001
pnc	1	6.92	0.0085

*Contrast Estimate Results*

Label	Mean			L'Beta Estimate	Standard Error	Alpha	L'Beta		Chi-Square	Pr > ChiSq
	Mean Estimate	Confidence Limits					Confidence Limits			
IRR for 10 percentage point increase in poverty	1.1079	1.0581	1.1600	0.1025	0.0234	0.05	0.0565	0.1484	19.10	<.0001
IRR for 10 percentage point increase in pnc	0.9450	0.9060	0.9858	-0.0565	0.0215	0.05	-0.0988	-0.0143	6.89	0.0087
IRR for MW vs NE	1.1454	1.1010	1.1917	0.1358	0.0202	0.05	0.0962	0.1753	45.28	<.0001
IRR for S vs NE	1.1802	1.1367	1.2254	0.1657	0.0192	0.05	0.1282	0.2033	74.78	<.0001
IRR for W vs NE	0.8588	0.8245	0.8946	-0.1522	0.0208	0.05	-0.1930	-0.1114	53.40	<.0001

**QUASI-LIKELIHOOD:  
POISSON REGRESSION WITH ADJUSTMENT TO SEs  
USING SCALE PARAMETER ESTIMATED BY DEV/DF**

**The GENMOD Procedure**

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<i>Model Information</i>	
<i>Data Set</i>	WORK.ONE
<i>Distribution</i>	Poisson
<i>Link Function</i>	Log
<i>Dependent Variable</i>	infantdth
<i>Offset Variable</i>	logbirths

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<i>Number of Observations Read</i>	50
<i>Number of Observations Used</i>	50

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<i>Class Level Information</i>				
<i>Class</i>	<i>Value</i>	<i>Design Variables</i>		
<i>region</i>	MIDWEST	1	0	0
	NORTHEAST	0	0	0
	SOUTH	0	1	0
	WEST	0	0	1

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<i>Parameter Information</i>		
<i>Parameter</i>	<i>Effect</i>	<i>region</i>
<i>Prm1</i>	Intercept	
<i>Prm2</i>	poverty	
<i>Prm3</i>	region	MIDWEST
<i>Prm4</i>	region	SOUTH
<i>Prm5</i>	region	WEST
<i>Prm6</i>	pnc	

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<i>Criteria For Assessing Goodness Of Fit</i>			
<i>Criterion</i>	<i>DF</i>	<i>Value</i>	<i>Value/DF</i>
<i>Deviance</i>	44	504.5563	11.4672
<i>Scaled Deviance</i>	44	44.0000	1.0000
<i>Pearson Chi-Square</i>	44	501.1190	11.3891
<i>Scaled Pearson X2</i>	44	43.7002	0.9932
<i>Log Likelihood</i>		13797.9978	
<i>Full Log Likelihood</i>		-443.5881	
<i>AIC (smaller is better)</i>		899.1761	
<i>AICC (smaller is better)</i>		901.1296	
<i>BIC (smaller is better)</i>		910.6483	

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**QUASI-LIKELIHOOD:  
POISSON REGRESSION WITH ADJUSTMENT TO SEs  
USING SCALE PARAMETER ESTIMATED BY DEV/DF**

**The GENMOD Procedure**

Algorithm converged.

*Analysis Of Maximum Likelihood Parameter Estimates*

<i>Parameter</i>	<i>DF</i>	<i>Estimate</i>	<i>Standard Error</i>	<i>Wald 95% Confidence Limits</i>		<i>Wald Chi-Square</i>	<i>Pr &gt; ChiSq</i>
<i>Intercept</i>	1	-5.1186	0.1330	-5.3794	-4.8579	1480.87	<.0001
<i>poverty</i>	1	0.0102	0.0079	-0.0053	0.0258	1.67	0.1969
<i>region</i> MIDWEST	1	0.1358	0.0683	0.0019	0.2697	3.95	0.0469
<i>region</i> SOUTH	1	0.1657	0.0649	0.0385	0.2929	6.52	0.0107
<i>region</i> WEST	1	-0.1522	0.0705	-0.2904	-0.0140	4.66	0.0309
<i>pnc</i>	1	-0.0057	0.0073	-0.0200	0.0086	0.60	0.4382
<i>Scale</i>	0	3.3863	0.0000	3.3863	3.3863		

**Note:** The scale parameter was estimated by the square root of DEVIANCE/DOF.

*LR Statistics For Type 3 Analysis*

<i>Source</i>	<i>Num DF</i>	<i>Den DF</i>	<i>F Value</i>	<i>Pr &gt; F</i>	<i>Chi-Square</i>	<i>Pr &gt; ChiSq</i>
<i>poverty</i>	1	44	1.67	0.2031	1.67	0.1964
<i>region</i>	3	44	12.56	<.0001	37.68	<.0001
<i>pnc</i>	1	44	0.60	0.4413	0.60	0.4371

*Contrast Estimate Results*

<i>Label</i>	<i>Mean</i>			<i>L'Beta Estimate</i>	<i>Standard Error</i>	<i>Alpha</i>	<i>L'Beta</i>		<i>Chi-Square</i>	<i>Pr &gt; ChiSq</i>
	<i>Mean Estimate</i>	<i>Confidence Limits</i>	<i>Confidence Limits</i>							
<i>IRR for 10 percentage point increase in poverty</i>	1.1079	0.9482	1.2944	0.1025	0.0794	0.05	-0.0532	0.2581	1.67	0.1969
<i>IRR for 10 percentage point increase in pnc</i>	0.9450	0.8191	1.0903	-0.0565	0.0729	0.05	-0.1995	0.0864	0.60	0.4382
<i>IRR for MW vs NE</i>	1.1454	1.0019	1.3096	0.1358	0.0683	0.05	0.0019	0.2697	3.95	0.0469
<i>IRR for S vs NE</i>	1.1802	1.0393	1.3403	0.1657	0.0649	0.05	0.0385	0.2929	6.52	0.0107
<i>IRR for W vs NE</i>	0.8588	0.7480	0.9861	-0.1522	0.0705	0.05	-0.2904	-0.0140	4.66	0.0309

**QUASI-LIKELIHOOD:  
POISSON REGRESSION WITH ADJUSTMENT TO SEs  
USING SCALE PARAMETER ESTIMATED BY PEARSON/DF**

**The GENMOD Procedure**

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<i>Model Information</i>	
<i>Data Set</i>	WORK.ONE
<i>Distribution</i>	Poisson
<i>Link Function</i>	Log
<i>Dependent Variable</i>	infantdth
<i>Offset Variable</i>	logbirths

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<i>Number of Observations Read</i>	50
<i>Number of Observations Used</i>	50

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<i>Class Level Information</i>				
<i>Class</i>	<i>Value</i>	<i>Design Variables</i>		
<i>region</i>	MIDWEST	1	0	0
	NORTHEAST	0	0	0
	SOUTH	0	1	0
	WEST	0	0	1

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<i>Parameter Information</i>		
<i>Parameter</i>	<i>Effect</i>	<i>region</i>
<i>Prm1</i>	Intercept	
<i>Prm2</i>	poverty	
<i>Prm3</i>	region	MIDWEST
<i>Prm4</i>	region	SOUTH
<i>Prm5</i>	region	WEST
<i>Prm6</i>	pnc	

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<i>Criteria For Assessing Goodness Of Fit</i>			
<i>Criterion</i>	<i>DF</i>	<i>Value</i>	<i>Value/DF</i>
<i>Deviance</i>	44	504.5563	11.4672
<i>Scaled Deviance</i>	44	44.3018	1.0069
<i>Pearson Chi-Square</i>	44	501.1190	11.3891
<i>Scaled Pearson X2</i>	44	44.0000	1.0000
<i>Log Likelihood</i>		13892.6422	
<i>Full Log Likelihood</i>		-443.5881	
<i>AIC (smaller is better)</i>		899.1761	
<i>AICC (smaller is better)</i>		901.1296	
<i>BIC (smaller is better)</i>		910.6483	

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**QUASI-LIKELIHOOD:  
POISSON REGRESSION WITH ADJUSTMENT TO SEs  
USING SCALE PARAMETER ESTIMATED BY PEARSON/DF**

**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	-5.1186	0.1326	-5.3785	-4.8588	1491.03	<.0001	
poverty	1	0.0102	0.0079	-0.0053	0.0258	1.68	0.1954	
region	MIDWEST	1	0.1358	0.0681	0.0023	0.2693	3.98	0.0462
region	SOUTH	1	0.1657	0.0647	0.0390	0.2925	6.57	0.0104
region	WEST	1	-0.1522	0.0703	-0.2899	-0.0144	4.69	0.0304
pnc	1	-0.0057	0.0073	-0.0199	0.0086	0.61	0.4367	
Scale	0	3.3748	0.0000	3.3748	3.3748			

**Note:** The scale parameter was estimated by the square root of Pearson's Chi-Square/DOF.

*LR Statistics For Type 3 Analysis*

Source	Num DF	Den DF	F Value	Pr > F	Chi-Square	Pr > ChiSq
poverty	1	44	1.68	0.2016	1.68	0.1948
region	3	44	12.65	<.0001	37.94	<.0001
pnc	1	44	0.61	0.4397	0.61	0.4356

*Contrast Estimate Results*

Label	Mean			L'Beta Estimate	Standard Error	Alpha	L'Beta		Chi-Square	Pr > ChiSq
	Mean Estimate	Confidence Limits	Confidence Limits							
IRR for 10 percentage point increase in poverty	1.1079	0.9487	1.2938	0.1025	0.0791	0.05	-0.0526	0.2576	1.68	0.1954
IRR for 10 percentage point increase in pnc	0.9450	0.8195	1.0897	-0.0565	0.0727	0.05	-0.1990	0.0859	0.61	0.4367
IRR for MW vs NE	1.1454	1.0023	1.3090	0.1358	0.0681	0.05	0.0023	0.2693	3.98	0.0462
IRR for S vs NE	1.1802	1.0397	1.3398	0.1657	0.0647	0.05	0.0390	0.2925	6.57	0.0104
IRR for W vs NE	0.8588	0.7483	0.9857	-0.1522	0.0703	0.05	-0.2899	-0.0144	4.69	0.0304

**NEGATIVE BINOMIAL REGRESSION****The GENMOD Procedure***Model Information*

<i>Data Set</i>	WORK.ONE
<i>Distribution</i>	Negative Binomial
<i>Link Function</i>	Log
<i>Dependent Variable</i>	infantdth
<i>Offset Variable</i>	logbirths

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*Number of Observations Read* 50

*Number of Observations Used* 50

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*Class Level Information*

<i>Class</i>	<i>Value</i>	<i>Design Variables</i>		
<i>region</i>	MIDWEST	1	0	0
	NORTHEAST	0	0	0
	SOUTH	0	1	0
	WEST	0	0	1

*Parameter Information*

<i>Parameter</i>	<i>Effect</i>	<i>region</i>
<i>Prm1</i>	Intercept	
<i>Prm2</i>	poverty	
<i>Prm3</i>	region	MIDWEST
<i>Prm4</i>	region	SOUTH
<i>Prm5</i>	region	WEST
<i>Prm6</i>	pnc	

*Criteria For Assessing Goodness Of Fit*

<i>Criterion</i>	<i>DF</i>	<i>Value</i>	<i>Value/DF</i>
<i>Deviance</i>	44	49.9754	1.1358
<i>Scaled Deviance</i>	44	49.9754	1.1358
<i>Pearson Chi-Square</i>	44	48.5841	1.1042
<i>Scaled Pearson X2</i>	44	48.5841	1.1042
<i>Log Likelihood</i>		158407.8000	
<i>Full Log Likelihood</i>		-260.0320	
<i>AIC (smaller is better)</i>		534.0639	
<i>AICC (smaller is better)</i>		536.7306	
<i>BIC (smaller is better)</i>		547.4481	

**NEGATIVE BINOMIAL REGRESSION****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
<i>Intercept</i>	1	-5.2190	0.0933	-5.4019	-5.0362	3128.53	<.0001
<i>poverty</i>	1	0.0147	0.0064	0.0021	0.0272	5.25	0.0219
<i>region</i> MIDWEST	1	0.1263	0.0576	0.0134	0.2391	4.81	0.0283
<i>region</i> SOUTH	1	0.2348	0.0615	0.1143	0.3553	14.59	0.0001
<i>region</i> WEST	1	-0.0646	0.0615	-0.1851	0.0558	1.11	0.2931
<i>pnc</i>	1	-0.0025	0.0055	-0.0133	0.0083	0.20	0.6555
<i>Dispersion</i>	1	0.0127	0.0032	0.0077	0.0208		

**Note:** The negative binomial dispersion parameter was estimated by maximum likelihood.

*LR Statistics For Type 3 Analysis*

Source	DF	Chi-Square	Pr > ChiSq
<i>poverty</i>	1	4.90	0.0268
<i>region</i>	3	26.72	<.0001
<i>pnc</i>	1	0.20	0.6556

*Contrast Estimate Results*

Label	Mean			L'Beta Estimate	Standard Error	Alpha	L'Beta		Chi-Square	Pr > ChiSq
	Mean Estimate	Confidence Limits					Confidence Limits			
<i>IRR for 10 percentage point increase in poverty</i>	1.1579	1.0214	1.3126	0.1466	0.0640	0.05	0.0212	0.2720	5.25	0.0219
<i>IRR for 10 percentage point increase in pnc</i>	0.9757	0.8758	1.0870	-0.0246	0.0551	0.05	-0.1326	0.0834	0.20	0.6555
<i>IRR for MW vs NE</i>	1.1346	1.0135	1.2701	0.1263	0.0576	0.05	0.0134	0.2391	4.81	0.0283
<i>IRR for S vs NE</i>	1.2646	1.1211	1.4265	0.2348	0.0615	0.05	0.1143	0.3553	14.59	0.0001
<i>IRR for W vs NE</i>	0.9374	0.8311	1.0574	-0.0646	0.0615	0.05	-0.1851	0.0558	1.11	0.2931