

APPENDIX G
NON-LINEAR REGRESSION RESULTS FOR TARGETING FACTORS

Table G-1 – Poisson and Negative Binomial Regression Models Relating Number of Part 50.20 Violations to Various Characteristics of Mines

Mine Characteristics	Equations with Employment (z-statistic)		Equation with Hours (z-statistic)	
	Poisson	Neg. Binomial	Poisson	Neg. Binomial
Coal	1.167*** (3.09)	1.454** (2.45)	1.088*** (2.88)	1.471*** (2.46)
Underground	0.805*** (5.40)	0.606 (1.42)	0.800*** (5.37)	0.666 (1.56)
Facility	1.034*** (7.01)	0.625* (1.84)	1.024*** (6.95)	0.659** (1.96)
Non-Metal	-1.488*** (-3.41)	-0.847 (-1.37)	-1.483*** (-3.40)	-0.790 (-1.27)
Metal	0.564 (1.39)	0.453 (0.59)	0.576 (1.42)	0.648 (0.85)
Stone	-0.431* (-1.75)	-0.226 (-0.69)	-0.404* (-1.65)	-0.182 (-0.55)
Portable operation	-0.263 (-0.75)	-0.149 (-0.33)	-0.226 (-0.65)	-0.157 (-0.34)
Part 48 training	0.588* (1.77)	0.636 (1.11)	0.592* (1.78)	0.690 (1.19)
Has a safety committee	-0.346** (-2.25)	-0.403 (-0.80)	-0.307** (-2.00)	-0.301 (-0.60)
Works 5 days per week	1.047* (1.79)	0.578 (0.80)	1.031* (1.76)	0.542 (0.75)
Works 6 or 7 days per week	1.381** (2.34)	1.058 (1.38)	1.403** (2.38)	1.057 (1.37)
Works 2 or more shifts per day	-0.078 (-0.46)	-0.018 (-0.05)	-0.106 (-0.63)	-0.004 (-0.01)
Number of employees (measured as a natural logarithm)	0.884*** (14.75)	0.804*** (5.90)	-	-
Number of hours (measured as a natural logarithm)	-	-	0.855*** (14.56)	0.712*** (5.63)
Regression constant	-6.626*** (-9.55)	-6.019*** (-6.21)	-13.032*** (-14.52)	-11.2*** (-7.18)
Number of observations (Part 50 Audits)	1,499	1,499	1,499	1,499
Likelihood ratio statistic	1,272***	195.52***	1,270***	192.04***
Pseudo R²	0.421	0.151	0.421	0.148

Note: Separate models were estimated using employees and employee hours since the two variables are highly correlated.

*** Statistically significant at the 1 percent level

** Statistically significant at the 5 percent level

* Statistically significant at the 10 percent level