The simulated dataset analyzed was based on a 1985 dataset consisting of schoolchildren who had exhibited symptoms of attention deficit disorder. The number of subjects (250) was sufficient to provide over 99% power for detecting effects of small to medium size (*f 2* = .08) in the multivariate analysis. Power analysis for the t-test indicated sample size (250) was sufficient for detecting effects of medium size (*d* = .045, *p* = .08, *sig* = .05). Power analysis for the chi-square tests indicated sample size (250) was sufficient for detecting effects of medium size (*w* = .032, *p* = .08, *sig* = .05).

*Table 1 – Descriptive statistics by DROPOUT*

|  |  |  |
| --- | --- | --- |
|  | 0 - Completed high school | 1 - Dropped out of high school |
|  | N=226 (90.4%) | N=24 (9.6%) |
| SOCPROB: |  |  |
| 0 - Yes 9th grade social problems | 210 (92.9%) | 19 (79.2%) |
| 1 - No 9th grade social problems | 16 (7.08%) | 5 (20.8%) |
| REPEAT: |  |  |
| 0 - Didn't repeat a grade | 199 (88.1%) | 14 (58.3%) |
| 1 - Repeated a grade | 27 (11.9%) | 10 (41.7%) |
| ADDSC | 51.0 (11.7) | 59.2 (9.60) |

*Table 2 – Descriptive statistics – mean and standard deviation*

|  |  |  |
| --- | --- | --- |
|  | Mean | *sd* |
| SOCPROB | 1.084 | 0.278 |
| REPEAT | 1.148 | 0.356 |
| ADDSC | 51.78 | 11.718 |
| DROPOUT | 1.096 | 0.295 |

As shown in Table 1, an overall minority of subjects dropped out of high school (9.6%). Logistic regression was employed to predict the probability that a given subject will drop out of high school. The dichotomous predictor variables were SOCPROB - a subject’s record of social problems in 9th grade and REPEAT – indicating a subject had repeated at least one grade. The continuous predictor variable was ADDSC – the subject’s mean score for attention deficit disorder behaviors in elementary school. A Box-Tidwell test of linearity of the logit indicated no significant problems with the assumptions of the analysis (*z* = .322, *p* = .747).

As visualized in Plot 1, with a threshold of .1 the full model correctly predicted a student would drop out of high school 54% of the time, and correctly predicted that a student would graduate from high school 76% of the time (*AIC* = 144.19)**.** Difference between -2(log likelihood) in the full model versus the intercept-only model are an appropriate measure of partial effects and are included in Table 3. A test of partial effects indicated significance for REPEAT (*p* = .003) and ADDSC (*p* = .014), while SOCPROB fell short of significance (*p* = .083). A likelihood ratio test of the full model compared with the intercept only model was statistically significant, *X2* (4, N = 250) = 21.908, p < .001. McFadden’s pseudo *R2* indicated moderate fit with the data (*R2* = .14, *p* < .001).

*Table 3 – Full model with odds ratios*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Predictor | *B* | Δ (-2LL) | *p* | Odds Ratio |
| SOCPROB | 1.061 | 2.70 | .083 | 2.89 |
| REPEAT | 1.417 | 7.96 | .003 | 4.13 |
| ADDSC | .0529 | 6.50 | .014 | 1.05 |

Although not statistically significant in the full model, the odds ratio for SOCPROB indicates that when holding all other variables constant, a subject with record of social problems is 2.89 times more likely to drop out of high school than a subject without record of social problems. Lack of significance in the full model is likely due to suppression or redundancy effects, and further tests would be warranted. The odds ratio for REPEAT indicates that when holding all other variables constant, a subject who has repeated at least one grade is 4.13 times more likely to drop out of high school than a subject who has not repeated a grade. The odds ratio for ADDSC indicates that a single point increase on the ADDSC scale increases is associated with an increase in the odds of dropping out of high school by a multiplicative factor of 1.05.

Univariate analysis showed that of subjects who dropped out of high school, a statistically significant majority had record of social problems in the 9th grade (79%), *X2* (1, *N* = 250) = 5.334, *p* = .021. Of subjects who dropped out of high school, a significant majority had repeated at least one grade (58.3%), *X2* (1, N = 250) = 15.197, *p* = .001. Analysis showed that subjects who dropped out of high school had in their record significantly higher mean elementary school scores for ADD-like behavior (*M* = 59.2, *sd* = 9.6) than did subjects who graduated high school (*M* = 51.0, *sd* = 11.6), t(30.705) = 3.90, *p* > .001, 95% CI[3.35, 13.07].

*Table 1 – Full model classification plot*

