|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Years Since Last Gather | Number of Areas | AML Success | Proportion | Number of Areas | AML Success | Proportion |
| 4 | 16 | 8 | 0.5 | 16 | 8 | 0.5 |
| 5 | 37 | 21 | 0.567568 | 36 | 20 | 0.555556 |
| 6 | 30 | 11 | 0.366667 | 30 | 11 | 0.366667 |
| 7 | 25 | 7 | 0.28 | 25 | 7 | 0.28 |
| 8 | 22 | 2 | 0.090909 | 22 | 2 | 0.090909 |
| 9 | 13 | 2 | 0.153846 | 13 | 2 | 0.153846 |
| 10 | 4 | 3 | 0.75 | 3 | 2 | 0.666667 |
| 11 | 4 | 2 | 0.5 | 3 | 1 | 0.333333 |
| 12 | 3 | 2 | 0.666667 | 2 | 1 | 0.5 |
| 13 | 2 | 1 | 0.5 | 2 | 1 | 0.5 |
| 14 | 1 | 0 | 0 | 1 | 0 | 0 |
| 16 | 4 | 2 | 0.5 | 4 | 2 | 0.5 |
| 17 | 1 | 1 | 1 | 1 | 1 | 1 |
| 18 | 1 | 1 | 1 | 0 | 0 | #DIV/0! |
| 19 | 1 | 1 | 1 | 0 | 0 | #DIV/0! |
| 22 | 1 | 1 | 1 | 0 | 0 | #DIV/0! |
| 24 | 2 | 0 | 0 | 2 | 0 | 0 |
| 28 | 1 | 1 | 1 | 1 | 1 | 1 |
| 31 | 1 | 1 | 1 | 1 | 1 | 1 |
| 35\* | 11 | 4 | 0.363636 | 9 | 2 | 0.222222 |

Left: Including Areas with 0 animals, Right: Threw out cases with 0 animals

\*35 was used arbitrarily to indicate that a gather had never been conducted in the area

Congress has determined that herds of wild horses and burros are national treasures and must be protected. Because these horses are protected from humans by law, and have relatively few predators, their populations must be managed to protect the overall health of the herds and prevent overgrazing. Our Project is to try and find a [logistic] model that will ideally predict how certain variables correspond to the rate of success that herds are controlled. Cases are herd areas managed by the BLM, success occurs when the number of animals in an area is less than the predetermined appropriate animal population (Area Management Level, AML) in the area. Attempted predictor variables are: years since the last gathering of animals (and sterilization of some animals and removal of excess animals), the total number of animals in the area, the numbers of acres in an area, and, if possible, the state in which an area is located.

As can be seen by the R output below, it would appear that the longer an area goes without a gather, the more likely it is to have AML success when 0 animal cases are included. When cases where 0 animals reside in the area have been tossed out, this relationship is reversed. Also, the “35 year” cases should probably either be adjusted or tossed out. We should also continue the search for other predictors. Parameter significance is a huge problem for these models.

R Output:

With 0 animal cases

|  |  |  |
| --- | --- | --- |
| Parameter | Value | P-Value |
| (Intercept) | -0.485664 | 0.0423 |
| yearSince | 0.006051 | 0.7562 |

Without 0 animal cases

|  |  |  |
| --- | --- | --- |
| Parameter | Value | P-Value |
| (Intercept) | -0.40085 | 0.118 |
| yearSince | -0.01868 | 0.425 |