MSDS 6372 UNIT 1 Solution

1. A simple case control study will work here. There is one factor in the experiment that we will call DIET which has two levels: 3 meal and 9 meal. Since there is only one factor, the treatments are simply the levels of that factor: 3 meal and 9 meal (nibbling). The response is the LDL level which will be measured from each subject in each group and test will be performed to test for a significant difference in mean LDL scores between the groups.

SAS SAMPLE SIZE SOLUTION;

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| --- | --- |
| **data** result;  do diet = **1** to **2**;  input LDL @@;  output;  end;  datalines;  100  80  ;  **run**;  **proc** **glmpower** data=result;  class diet;  model LDL = diet;  power  stddev=**100**  ntotal = **.**  power = **.8**;  **run**; |  |

|  |  |
| --- | --- |
| **proc** **power**;  twosamplemeans  power = **.8**  ntotal = **.**  stddev = **100**  meandiff = **20**  alpha = **.05**;  **run**; |  |

BY HAND SOLUTION (APPROXIMATION) … ANSWERS WILL VARY

Assuming we would like to fix alpha to be 5% the estimated sample size to maintain an effect size of . Where is the mean reduction in LDL under the 3 meal diet. Note also that from the problem we may assume that = .

(400 in each group.)

This is a rough estimate (which is fine for this problem.) However, to be exact we must note that the t multiplier for alpha = .05 and df = 798 (800-2) is not exactly 2.0. In fact it is about 1.963 yielding:

n = approximately 771

Note here that the t multiplier for alpha = .5 and df = 769 (771-2) is about 1.963 so we have approximately converged. We estimate therefore that we will need at least 386 in each group (total = 772) to achieve a power of at least .8.