Statistical Consulting

Homework 2

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2025-03-21

目錄

一、讀取資料、安裝包下載

```
library(reticulate)
library(Hmisc)
library(knitr)
library(stringr)
library(table1)
setwd("C:/Users/chars/Desktop/2025_Statistical_Consulting/Homework2")
mushroom <- read.csv("primary_data.csv",sep = ";")
```

二、資料前處理

將資料中缺失的欄位紀錄為 NA，並將 Variable Information 進行整理。

```
# mushroom[mushroom==""] <- NA
#
# content <- function(item) {
#   result <- lapply(item, function(text) {
#     value <- gsub("\\[|\\]", "", text)
#     if (grepl("\\d", value)) {
#       observation <- as.numeric(unlist(str_extract_all(value, "-?\\d+(\\.\\d+)?")))
#     } else {
#       observation <- unlist(str_extract_all(value, "[a-zA-Z]+"))
#     }
#     return(observation)
#   })
#   return(result)
# }
#
```

```
# preprocess <- function(data){
#   len <- c()
#   n <- length(lapply(data,content))
#   for (i in 1:n) {
#     len <- c(len, length(content(data)[[i]]))
#   }
#   maximum <- max(len)
#
#   if (class(unique(do.call(c,content(data))))=="numeric"){
#     mtx <- matrix(NA,nrow = n, ncol = maximum+1)
#     for (i in 1:n) {
#         if (length(content(data)[[i]])==1) {
#           if(is.na(content(data)[[i]])==FALSE){
#             mtx[i,1] <- content(data)[[i]]
#           }
#         }
#         else{
#           if(all(is.na(content(data)[[i]]))==FALSE){
#             mtx[i,2:(maximum+1)] <- content(data)[[i]]
#           }
#         }
#       }
#     }else{
#       col_name <- c(na.omit(unique(do.call(c,content(data)))))
#       mtx <- matrix(NA,nrow = n, ncol = length(col_name))
#       colnames(mtx) <- col_name
#       for (i in 1:n) {
#         for (j in 1:ncol(mtx)) {
#           for(k in 1:length(content(data)[[i]])){
#             if(is.na(content(data)[[i]][k])==FALSE){
#               if (colnames(mtx)[j]==content(data)[[i]][k]) {
#                 mtx[i,j] <- 1
#               }
#             }
#           }
#         }
#         mtx[i,is.na(mtx[i,])] <- 0
#         if (sum(mtx[i,])==0){
#           mtx[i,mtx[i,]==0] <- NA
#           }
#       }
#     }
#   return(mtx)
# }
#
# cap_diameter <- preprocess(mushroom$cap.diameter)
# colnames(cap_diameter) <- c("cap_diameter_mean",
#                             "cap_diameter_min","cap_diameter_max")
#
# cap_shape <- preprocess(mushroom$cap.shape)
# colnames(cap_shape) <- paste(rep("cap_shape_",
#                                  length(colnames(cap_shape))),
#                              colnames(cap_shape))
```

```
#
# Cap_surface <- preprocess(mushroom$Cap.surface)
# colnames(Cap_surface) <- paste(rep("Cap_surface_",
#                                    length(colnames(Cap_surface))),
#                                colnames(Cap_surface))
#
# cap_color <- preprocess(mushroom$cap.color)
# colnames(cap_color) <- paste(rep("cap_color_",
#                                  length(colnames(cap_color))),
#                              colnames(cap_color))
#
# does_bruise_or_bleed <- preprocess(mushroom$does.bruise.or.bleed)
# colnames(does_bruise_or_bleed) <- paste(rep("does_bruise_or_bleed_",
#                                             length(colnames(does_bruise_or_bleed))),
#                                         colnames(does_bruise_or_bleed))
#
# gill_attachment <- preprocess(mushroom$gill.attachment)
# colnames(gill_attachment) <- paste(rep("gill_attachment_",
#                                        length(colnames(gill_attachment))),
#                                    colnames(gill_attachment))
#
# gill_spacing <- preprocess(mushroom$gill.spacing)
# colnames(gill_spacing) <- paste(rep("gill_spacing_",
#                                     length(colnames(gill_spacing))),
#                                 colnames(gill_spacing))
#
# gill_color <- preprocess(mushroom$gill.color)
# colnames(gill_color) <- paste(rep("gill_color_",
#                                   length(colnames(gill_color))),
#                               colnames(gill_color))
#
# stem_height <- preprocess(mushroom$stem.height)
# colnames(stem_height) <- c("stem_height_mean",
#                            "stem_height_min",
#                            "stem_height_max")
#
# stem_width <- preprocess(mushroom$stem.width)
# colnames(stem_width) <- c("stem_width_mean",
#                           "stem_width_min","stem_width_max")
#
# stem_root <- preprocess(mushroom$stem.root)
# colnames(stem_root) <- paste(rep("stem_root_",
#                                  length(colnames(stem_root))),
#                              colnames(stem_root))
#
#
# stem_surface <- preprocess(mushroom$stem.surface)
# colnames(stem_surface) <- paste(rep("stem_surface_",
#                                     length(colnames(stem_surface))),
#                                 colnames(stem_surface))
#
# stem_color <- preprocess(mushroom$stem.color)
# colnames(stem_color) <- paste(rep("stem_color_",
#                                   length(colnames(stem_color))),
```

```
#                               colnames(stem_color))
#
# veil_type <- preprocess(mushroom$veil.type)
# colnames(veil_type) <- paste(rep("veil_type_",
#                                  length(colnames(veil_type))),
#                              colnames(veil_type))
#
# veil_color <- preprocess(mushroom$veil.color)
# colnames(veil_color) <- paste(rep("veil_color_",
#                                   length(colnames(veil_color))),
#                               colnames(veil_color))
#
# has_ring <- preprocess(mushroom$has.ring)
# colnames(has_ring) <- paste(rep("has_ring_",
#                                 length(colnames(has_ring))),
#                             colnames(has_ring))
#
# ring_type <- preprocess(mushroom$ring.type)
# colnames(ring_type) <- paste(rep("ring_type_",
#                                  length(colnames(ring_type))),
#                              colnames(ring_type))
#
# Spore_print_color <- preprocess(mushroom$Spore.print.color)
# colnames(Spore_print_color) <- paste(rep("Spore_print_color_",
#                                          length(colnames(Spore_print_color))),
#                                      colnames(Spore_print_color))
#
# habitat <- preprocess(mushroom$habitat)
# colnames(habitat) <- paste(rep("habitat_",
#                                length(colnames(habitat))),
#                            colnames(habitat))
#
# ring_type <- preprocess(mushroom$ring.type)
# colnames(ring_type) <- paste(rep("ring_type_",
#                                  length(colnames(ring_type))),
#                              colnames(ring_type))
```

```
mushroom <- read.csv("mushroom.csv")
for (i in 1:ncol(mushroom)) {
  if (all(i != c(5:7,62:67))){
    mushroom[,i] <- as.factor(mushroom[,i])
  }
}
mushroom <- mushroom[,-c(1:3)]

#| results: asis
describe(mushroom)
```

```
mushroom

 130  Variables      173  Observations
--------------------------------------------------------------------------------
class
```

```
       n  missing distinct
     173        0        2

Value          e     p
Frequency     77    96
Proportion 0.445 0.555
---------------------------------------------------------------------------
cap_diameter_mean
       n  missing distinct     Info     Mean
       1      172        1        0       50

Value      50
Frequency   1
Proportion  1
---------------------------------------------------------------------------
cap_diameter_min
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     172        1       13    0.976    3.776      3.5    2.533        1
     .10      .25      .50      .75      .90      .95
       1        2        3        5        7        8

Value        0.4   0.5   0.7   1.0   2.0   3.0   4.0   5.0   6.0   7.0   8.0
Frequency      2     4     1    17    39    24    26    29    11     4     9
Proportion 0.012 0.023 0.006 0.099 0.227 0.140 0.151 0.169 0.064 0.023 0.052

Value       10.0  12.0
Frequency      4     2
Proportion 0.023 0.012

For the frequency table, variable is rounded to the nearest 0
---------------------------------------------------------------------------
cap_diameter_max
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     172        1       19    0.991    9.199      8.5    6.147        2
     .10      .25      .50      .75      .90      .95
       3        5        8       12       15       20

Value        1.0   1.3   1.5   2.0   3.0   4.0   5.0   6.0   7.0   8.0   9.0
Frequency      3     1     4     7     6    12    18    16     7    16     3
Proportion 0.017 0.006 0.023 0.041 0.035 0.070 0.105 0.093 0.041 0.093 0.017

Value       10.0  12.0  14.0  15.0  18.0  20.0  25.0  30.0
Frequency     28    18     3    15     3     5     5     2
Proportion 0.163 0.105 0.017 0.087 0.017 0.029 0.029 0.012

For the frequency table, variable is rounded to the nearest 0
---------------------------------------------------------------------------
cap_shape_.x
       n  missing distinct
     173        0        2

Value          0     1
Frequency     63   110
Proportion 0.364 0.636
```

```
---------------------------------------------------------------------------
cap_shape_.f
       n  missing distinct
     173        0        2

Value          0     1
Frequency     99    74
Proportion 0.572 0.428
---------------------------------------------------------------------------
cap_shape_.p
       n  missing distinct
     173        0        2

Value          0     1
Frequency    158    15
Proportion 0.913 0.087
---------------------------------------------------------------------------
cap_shape_.b
       n  missing distinct
     173        0        2

Value          0     1
Frequency    150    23
Proportion 0.867 0.133
---------------------------------------------------------------------------
cap_shape_.c
       n  missing distinct
     173        0        2

Value          0     1
Frequency    165     8
Proportion 0.954 0.046
---------------------------------------------------------------------------
cap_shape_.s
       n  missing distinct
     173        0        2

Value          0     1
Frequency    137    36
Proportion 0.792 0.208
---------------------------------------------------------------------------
cap_shape_.o
       n  missing distinct
     173        0        2

Value          0     1
Frequency    161    12
Proportion 0.931 0.069
---------------------------------------------------------------------------
Cap_surface_.g
       n  missing distinct
     133       40        2

Value         0    1
```

```
Frequency   117   16
Proportion 0.88 0.12
---------------------------------------------------------------------------
Cap_surface_.h
       n  missing distinct
     133       40        2

Value          0     1
Frequency    107    26
Proportion 0.805 0.195
---------------------------------------------------------------------------
Cap_surface_.t
       n  missing distinct
     133       40        2

Value          0     1
Frequency     96    37
Proportion 0.722 0.278
---------------------------------------------------------------------------
Cap_surface_.y
       n  missing distinct
     133       40        2

Value          0     1
Frequency    110    23
Proportion 0.827 0.173
---------------------------------------------------------------------------
Cap_surface_.e
       n  missing distinct
     133       40        2

Value          0     1
Frequency    122    11
Proportion 0.917 0.083
---------------------------------------------------------------------------
Cap_surface_.s
       n  missing distinct
     133       40        2

Value          0     1
Frequency    100    33
Proportion 0.752 0.248
---------------------------------------------------------------------------
Cap_surface_.l
       n  missing distinct
     133       40        2

Value          0    1
Frequency    129    4
Proportion 0.97 0.03
---------------------------------------------------------------------------
Cap_surface_.d
       n  missing distinct
     133       40        2
```

```
Value          0     1
Frequency    115    18
Proportion 0.865 0.135
--------------------------------------------------------------------------------
Cap_surface_.w
       n  missing distinct
     133       40        2

Value         0    1
Frequency   125    8
Proportion 0.94 0.06
--------------------------------------------------------------------------------
Cap_surface_.i
       n  missing distinct
     133       40        2

Value          0     1
Frequency    124     9
Proportion 0.932 0.068
--------------------------------------------------------------------------------
Cap_surface_.k
       n  missing distinct
     133       40        2

Value          0     1
Frequency    123    10
Proportion 0.925 0.075
--------------------------------------------------------------------------------
cap_color_.e
       n  missing distinct
     173        0        2

Value          0     1
Frequency    148    25
Proportion 0.855 0.145
--------------------------------------------------------------------------------
cap_color_.o
       n  missing distinct
     173        0        2

Value          0     1
Frequency    151    22
Proportion 0.873 0.127
--------------------------------------------------------------------------------
cap_color_.n
       n  missing distinct
     173        0        2

Value          0     1
Frequency     63   110
Proportion 0.364 0.636
--------------------------------------------------------------------------------
cap_color_.g
```

```
       n  missing distinct
     173        0        2

Value          0     1
Frequency    145    28
Proportion 0.838 0.162
--------------------------------------------------------------------------------
cap_color_.r
       n  missing distinct
     173        0        2

Value          0     1
Frequency    160    13
Proportion 0.925 0.075
--------------------------------------------------------------------------------
cap_color_.w
       n  missing distinct
     173        0        2

Value          0     1
Frequency    138    35
Proportion 0.798 0.202
--------------------------------------------------------------------------------
cap_color_.y
       n  missing distinct
     173        0        2

Value          0     1
Frequency    129    44
Proportion 0.746 0.254
--------------------------------------------------------------------------------
cap_color_.p
       n  missing distinct
     173        0        2

Value          0     1
Frequency    162    11
Proportion 0.936 0.064
--------------------------------------------------------------------------------
cap_color_.b
       n  missing distinct
     173        0        2

Value         0    1
Frequency   166    7
Proportion 0.96 0.04
--------------------------------------------------------------------------------
cap_color_.u
       n  missing distinct
     173        0        2

Value          0     1
Frequency    163    10
Proportion 0.942 0.058
```

```
---------------------------------------------------------------------------
cap_color_.l
       n  missing distinct
     173        0        2

Value          0     1
Frequency    167     6
Proportion 0.965 0.035
---------------------------------------------------------------------------
cap_color_.k
       n  missing distinct
     173        0        2

Value          0     1
Frequency    164     9
Proportion 0.948 0.052
---------------------------------------------------------------------------
does_bruise_or_bleed_.f
       n  missing distinct
     173        0        2

Value          0     1
Frequency     30   143
Proportion 0.173 0.827
---------------------------------------------------------------------------
does_bruise_or_bleed_.t
       n  missing distinct
     173        0        2

Value          0     1
Frequency    143    30
Proportion 0.827 0.173
---------------------------------------------------------------------------
gill_attachment_.e
       n  missing distinct
     145       28        2

Value         0    1
Frequency   129   16
Proportion 0.89 0.11
---------------------------------------------------------------------------
gill_attachment_.a
       n  missing distinct
     145       28        2

Value          0     1
Frequency    105    40
Proportion 0.724 0.276
---------------------------------------------------------------------------
gill_attachment_.d
       n  missing distinct
     145       28        2

Value          0     1
```

```
Frequency    112    33
Proportion 0.772 0.228
---------------------------------------------------------------------------
gill_attachment_.s
       n  missing distinct
     145       28        2

Value         0    1
Frequency   129   16
Proportion 0.89 0.11
---------------------------------------------------------------------------
gill_attachment_.x
       n  missing distinct
     145       28        2

Value          0     1
Frequency    124    21
Proportion 0.855 0.145
---------------------------------------------------------------------------
gill_attachment_.p
       n  missing distinct
     145       28        2

Value          0     1
Frequency    128    17
Proportion 0.883 0.117
---------------------------------------------------------------------------
gill_attachment_.f
       n  missing distinct
     145       28        2

Value          0     1
Frequency    135    10
Proportion 0.931 0.069
---------------------------------------------------------------------------
gill_spacing_.c
       n  missing distinct
     102       71        2

Value          0     1
Frequency     32    70
Proportion 0.314 0.686
---------------------------------------------------------------------------
gill_spacing_.d
       n  missing distinct
     102       71        2

Value          0     1
Frequency     80    22
Proportion 0.784 0.216
---------------------------------------------------------------------------
gill_spacing_.f
       n  missing distinct
     102       71        2
```

```
Value          0     1
Frequency     92    10
Proportion 0.902 0.098
--------------------------------------------------------------------------------
gill_color_.w
       n  missing distinct
     173        0        2

Value          0     1
Frequency    100    73
Proportion 0.578 0.422
--------------------------------------------------------------------------------
gill_color_.n
       n  missing distinct
     173        0        2

Value          0     1
Frequency    126    47
Proportion 0.728 0.272
--------------------------------------------------------------------------------
gill_color_.p
       n  missing distinct
     173        0        2

Value          0     1
Frequency    145    28
Proportion 0.838 0.162
--------------------------------------------------------------------------------
gill_color_.u
       n  missing distinct
     173        0        2

Value         0    1
Frequency   166    7
Proportion 0.96 0.04
--------------------------------------------------------------------------------
gill_color_.b
       n  missing distinct
     173        0        2

Value          0     1
Frequency    168     5
Proportion 0.971 0.029
--------------------------------------------------------------------------------
gill_color_.g
       n  missing distinct
     173        0        2

Value          0     1
Frequency    150    23
Proportion 0.867 0.133
--------------------------------------------------------------------------------
gill_color_.y
```

```
       n  missing distinct
     173        0        2

Value          0     1
Frequency    129    44
Proportion 0.746 0.254
---------------------------------------------------------------------------
gill_color_.r
       n  missing distinct
     173        0        2

Value          0     1
Frequency    165     8
Proportion 0.954 0.046
---------------------------------------------------------------------------
gill_color_.e
       n  missing distinct
     173        0        2

Value          0     1
Frequency    167     6
Proportion 0.965 0.035
---------------------------------------------------------------------------
gill_color_.o
       n  missing distinct
     173        0        2

Value          0     1
Frequency    160    13
Proportion 0.925 0.075
---------------------------------------------------------------------------
gill_color_.k
       n  missing distinct
     173        0        2

Value          0     1
Frequency    158    15
Proportion 0.913 0.087
---------------------------------------------------------------------------
gill_color_.f
       n  missing distinct
     173        0        2

Value          0     1
Frequency    163    10
Proportion 0.942 0.058
---------------------------------------------------------------------------
stem_height_mean
       n  missing distinct     Info     Mean
       3      170        1        0        0

Value      0
Frequency  3
Proportion 1
```

```
---------------------------------------------------------------------------
stem_height_min
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     170        3       11    0.955    4.382        4    2.157        2
     .10      .25      .50      .75      .90      .95
       2        3        4        5        7        8

Value          1     2     3     4     5     6     7     8    10    12    15
Frequency      2    21    38    52    24    15     3     7     5     1     2
Proportion 0.012 0.124 0.224 0.306 0.141 0.088 0.018 0.041 0.029 0.006 0.012

For the frequency table, variable is rounded to the nearest 0
---------------------------------------------------------------------------
stem_height_max
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     170        3       18    0.976    9.029      8.5    4.205     4.45
     .10      .25      .50      .75      .90      .95
    5.00     6.00     8.00    10.00    15.00    15.00

Value          2     3     4     5     6     7     8     9    10    11    12
Frequency      1     2     6    14    25    16    37     2    35     1    12
Proportion 0.006 0.012 0.035 0.082 0.147 0.094 0.218 0.012 0.206 0.006 0.071

Value         14    15    18    20    25    30    35
Frequency      1    10     1     4     1     1     1
Proportion 0.006 0.059 0.006 0.024 0.006 0.006 0.006

For the frequency table, variable is rounded to the nearest 0
---------------------------------------------------------------------------
stem_width_mean
       n  missing distinct     Info     Mean  pMedian      Gmd
      11      162        4    0.918    4.091        5    5.055

Value          0     1     2    10
Frequency      3     3     1     4
Proportion 0.273 0.273 0.091 0.364

For the frequency table, variable is rounded to the nearest 0
---------------------------------------------------------------------------
stem_width_min
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     162       11       15     0.98     8.83        8    6.785        2
     .10      .25      .50      .75      .90      .95
       2        4        8       10       20       20

Value        0.5   1.0   2.0   3.0   4.0   5.0   6.0   7.0   8.0  10.0  12.0
Frequency      1     6    17    12    12    19     7     1    10    38     1
Proportion 0.006 0.037 0.105 0.074 0.074 0.117 0.043 0.006 0.062 0.235 0.006

Value       15.0  20.0  30.0  40.0
Frequency     20    16     1     1
Proportion 0.123 0.099 0.006 0.006

For the frequency table, variable is rounded to the nearest 0
```

```
---------------------------------------------------------------------------
stem_width_max
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     162       11       20    0.991    16.58       15    13.51        3
     .10      .25      .50      .75      .90      .95
       4        8       15       20       30       40

Value          1     2     3     4     5     6     7     8    10    12    15
Frequency      1     5    10     9     5     3     3    17    15    11    19
Proportion 0.006 0.031 0.062 0.056 0.031 0.019 0.019 0.105 0.093 0.068 0.117

Value         18    20    25    30    40    50    60    80   100
Frequency      4    26    10    11     8     1     2     1     1
Proportion 0.025 0.160 0.062 0.068 0.049 0.006 0.012 0.006 0.006

For the frequency table, variable is rounded to the nearest 0
---------------------------------------------------------------------------
stem_root_.s
       n  missing distinct
      27      146        2

Value          0     1
Frequency     18     9
Proportion 0.667 0.333
---------------------------------------------------------------------------
stem_root_.b
       n  missing distinct
      27      146        2

Value          0     1
Frequency     18     9
Proportion 0.667 0.333
---------------------------------------------------------------------------
stem_root_.r
       n  missing distinct
      27      146        2

Value          0     1
Frequency     23     4
Proportion 0.852 0.148
---------------------------------------------------------------------------
stem_root_.c
       n  missing distinct
      27      146        2

Value          0     1
Frequency     25     2
Proportion 0.926 0.074
---------------------------------------------------------------------------
stem_root_.f
       n  missing distinct
      27      146        2

Value          0     1
```

```
Frequency     24     3
Proportion 0.889 0.111
---------------------------------------------------------------------------
stem_surface_.y
       n  missing distinct
      65      108        2

Value          0     1
Frequency     50    15
Proportion 0.769 0.231
---------------------------------------------------------------------------
stem_surface_.s
       n  missing distinct
      65      108        2

Value          0     1
Frequency     46    19
Proportion 0.708 0.292
---------------------------------------------------------------------------
stem_surface_.k
       n  missing distinct
      65      108        2

Value          0     1
Frequency     60     5
Proportion 0.923 0.077
---------------------------------------------------------------------------
stem_surface_.i
       n  missing distinct
      65      108        2

Value          0     1
Frequency     51    14
Proportion 0.785 0.215
---------------------------------------------------------------------------
stem_surface_.h
       n  missing distinct
      65      108        2

Value          0     1
Frequency     63     2
Proportion 0.969 0.031
---------------------------------------------------------------------------
stem_surface_.t
       n  missing distinct
      65      108        2

Value          0     1
Frequency     57     8
Proportion 0.877 0.123
---------------------------------------------------------------------------
stem_surface_.g
       n  missing distinct
      65      108        2
```

```
Value          0     1
Frequency     60     5
Proportion 0.923 0.077
--------------------------------------------------------------------------------
stem_surface_.f
       n  missing distinct
      65      108        2

Value          0     1
Frequency     62     3
Proportion 0.954 0.046
--------------------------------------------------------------------------------
stem_color_.w
       n  missing distinct
     173        0        2

Value          0     1
Frequency     99    74
Proportion 0.572 0.428
--------------------------------------------------------------------------------
stem_color_.y
       n  missing distinct
     173        0        2

Value          0     1
Frequency    141    32
Proportion 0.815 0.185
--------------------------------------------------------------------------------
stem_color_.n
       n  missing distinct
     173        0        2

Value          0     1
Frequency    103    70
Proportion 0.595 0.405
--------------------------------------------------------------------------------
stem_color_.b
       n  missing distinct
     173        0        2

Value          0     1
Frequency    172     1
Proportion 0.994 0.006
--------------------------------------------------------------------------------
stem_color_.u
       n  missing distinct
     173        0        2

Value         0    1
Frequency   166    7
Proportion 0.96 0.04
--------------------------------------------------------------------------------
stem_color_.l
```

```
       n  missing distinct
     173        0        2

Value          0     1
Frequency    171     2
Proportion 0.988 0.012
-------------------------------------------------------------------------------
stem_color_.r
       n  missing distinct
     173        0        2

Value          0     1
Frequency    169     4
Proportion 0.977 0.023
-------------------------------------------------------------------------------
stem_color_.p
       n  missing distinct
     173        0        2

Value          0     1
Frequency    169     4
Proportion 0.977 0.023
-------------------------------------------------------------------------------
stem_color_.e
       n  missing distinct
     173        0        2

Value          0     1
Frequency    162    11
Proportion 0.936 0.064
-------------------------------------------------------------------------------
stem_color_.k
       n  missing distinct
     173        0        2

Value          0     1
Frequency    169     4
Proportion 0.977 0.023
-------------------------------------------------------------------------------
stem_color_.g
       n  missing distinct
     173        0        2

Value          0     1
Frequency    159    14
Proportion 0.919 0.081
-------------------------------------------------------------------------------
stem_color_.o
       n  missing distinct
     173        0        2

Value          0     1
Frequency    161    12
Proportion 0.931 0.069
```

```
---------------------------------------------------------------------------
stem_color_.f
       n  missing distinct
     173        0        2

Value          0     1
Frequency    170     3
Proportion 0.983 0.017
---------------------------------------------------------------------------
veil_type_.u
       n  missing distinct    value
       9      164        1        1

Value      1
Frequency  9
Proportion 1
---------------------------------------------------------------------------
veil_color_.w
       n  missing distinct
      21      152        2

Value          0     1
Frequency      5    16
Proportion 0.238 0.762
---------------------------------------------------------------------------
veil_color_.y
       n  missing distinct
      21      152        2

Value          0     1
Frequency     19     2
Proportion 0.905 0.095
---------------------------------------------------------------------------
veil_color_.e
       n  missing distinct
      21      152        2

Value          0     1
Frequency     20     1
Proportion 0.952 0.048
---------------------------------------------------------------------------
veil_color_.n
       n  missing distinct
      21      152        2

Value          0     1
Frequency     19     2
Proportion 0.905 0.095
---------------------------------------------------------------------------
veil_color_.u
       n  missing distinct
      21      152        2

Value          0     1
```

```
Frequency     20     1
Proportion 0.952 0.048
--------------------------------------------------------------------------------
veil_color_.k
       n  missing distinct
      21      152        2

Value          0     1
Frequency     20     1
Proportion 0.952 0.048
--------------------------------------------------------------------------------
has_ring_.t
       n  missing distinct
     173        0        2

Value          0     1
Frequency    130    43
Proportion 0.751 0.249
--------------------------------------------------------------------------------
has_ring_.f
       n  missing distinct
     173        0        2

Value          0     1
Frequency     43   130
Proportion 0.249 0.751
--------------------------------------------------------------------------------
ring_type_.ring_type_.g
       n  missing distinct
     166        7        2

Value         0    1
Frequency   161    5
Proportion 0.97 0.03
--------------------------------------------------------------------------------
ring_type_.ring_type_.p
       n  missing distinct
     166        7        2

Value         0    1
Frequency   161    5
Proportion 0.97 0.03
--------------------------------------------------------------------------------
ring_type_.ring_type_.e
       n  missing distinct
     166        7        2

Value          0     1
Frequency    158     8
Proportion 0.952 0.048
--------------------------------------------------------------------------------
ring_type_.ring_type_.l
       n  missing distinct
     166        7        2
```

```
Value          0     1
Frequency    160     6
Proportion 0.964 0.036
--------------------------------------------------------------------------------
ring_type_.ring_type_.f
       n  missing distinct
     166        7        2

Value          0     1
Frequency     29   137
Proportion 0.175 0.825
--------------------------------------------------------------------------------
ring_type_.ring_type_.m
       n  missing distinct
     166        7        2

Value          0     1
Frequency    165     1
Proportion 0.994 0.006
--------------------------------------------------------------------------------
ring_type_.ring_type_.r
       n  missing distinct
     166        7        2

Value         0    1
Frequency   161    5
Proportion 0.97 0.03
--------------------------------------------------------------------------------
ring_type_.ring_type_.z
       n  missing distinct
     166        7        2

Value          0     1
Frequency    160     6
Proportion 0.964 0.036
--------------------------------------------------------------------------------
Spore_print_color_.w
       n  missing distinct
      18      155        2

Value          0     1
Frequency     14     4
Proportion 0.778 0.222
--------------------------------------------------------------------------------
Spore_print_color_.p
       n  missing distinct
      18      155        2

Value          0     1
Frequency     14     4
Proportion 0.778 0.222
--------------------------------------------------------------------------------
Spore_print_color_.k
```

```
       n  missing distinct
      18      155        2

Value          0     1
Frequency     11     7
Proportion 0.611 0.389
---------------------------------------------------------------------------
Spore_print_color_.r
       n  missing distinct
      18      155        2

Value          0     1
Frequency     17     1
Proportion 0.944 0.056
---------------------------------------------------------------------------
Spore_print_color_.u
       n  missing distinct
      18      155        2

Value          0     1
Frequency     17     1
Proportion 0.944 0.056
---------------------------------------------------------------------------
Spore_print_color_.n
       n  missing distinct
      18      155        2

Value          0     1
Frequency     15     3
Proportion 0.833 0.167
---------------------------------------------------------------------------
Spore_print_color_.g
       n  missing distinct
      18      155        2

Value          0     1
Frequency     17     1
Proportion 0.944 0.056
---------------------------------------------------------------------------
habitat_.d
       n  missing distinct
     173        0        2

Value          0     1
Frequency     22   151
Proportion 0.127 0.873
---------------------------------------------------------------------------
habitat_.m
       n  missing distinct
     173        0        2

Value          0     1
Frequency    156    17
Proportion 0.902 0.098
```

```
---------------------------------------------------------------------------
habitat_.g
       n  missing distinct
     173        0        2

Value         0    1
Frequency   135   38
Proportion 0.78 0.22
---------------------------------------------------------------------------
habitat_.h
       n  missing distinct
     173        0        2

Value          0     1
Frequency    160    13
Proportion 0.925 0.075
---------------------------------------------------------------------------
habitat_.l
       n  missing distinct
     173        0        2

Value          0     1
Frequency    155    18
Proportion 0.896 0.104
---------------------------------------------------------------------------
habitat_.p
       n  missing distinct
     173        0        2

Value          0     1
Frequency    171     2
Proportion 0.988 0.012
---------------------------------------------------------------------------
habitat_.w
       n  missing distinct
     173        0        2

Value          0     1
Frequency    172     1
Proportion 0.994 0.006
---------------------------------------------------------------------------
habitat_.u
       n  missing distinct
     173        0        2

Value          0     1
Frequency    172     1
Proportion 0.994 0.006
---------------------------------------------------------------------------
ring_type_.ring_type_.g.1
       n  missing distinct
     166        7        2

Value         0    1
```

```
Frequency   161    5
Proportion 0.97 0.03
---------------------------------------------------------------------------
ring_type_.ring_type_.p.1
       n  missing distinct
     166        7        2

Value         0    1
Frequency   161    5
Proportion 0.97 0.03
---------------------------------------------------------------------------
ring_type_.ring_type_.e.1
       n  missing distinct
     166        7        2

Value          0     1
Frequency    158     8
Proportion 0.952 0.048
---------------------------------------------------------------------------
ring_type_.ring_type_.l.1
       n  missing distinct
     166        7        2

Value          0     1
Frequency    160     6
Proportion 0.964 0.036
---------------------------------------------------------------------------
ring_type_.ring_type_.f.1
       n  missing distinct
     166        7        2

Value          0     1
Frequency     29   137
Proportion 0.175 0.825
---------------------------------------------------------------------------
ring_type_.ring_type_.m.1
       n  missing distinct
     166        7        2

Value          0     1
Frequency    165     1
Proportion 0.994 0.006
---------------------------------------------------------------------------
ring_type_.ring_type_.r.1
       n  missing distinct
     166        7        2

Value         0    1
Frequency   161    5
Proportion 0.97 0.03
---------------------------------------------------------------------------
ring_type_.ring_type_.z.1
       n  missing distinct
     166        7        2
```

```
Value          0     1
Frequency    160     6
Proportion 0.964 0.036
--------------------------------------------------------------------------------
```

```
kable(table1(~(.)|class,data = mushroom))
```

	e	p	Overall
	(N=77)	(N=96)	(N=173)
cap_diameter_mean			
Mean (SD)	50.0 (NA)	NA (NA)	50.0 (NA)
Median [Min, Max]	50.0 [50.0, 50.0]	NA [NA, NA]	50.0 [50.0, 50.0]
Missing	76 (98.7%)	96 (100%)	172 (99.4%)
cap_diameter_min			
Mean (SD)	4.16 (2.38)	3.47 (2.27)	3.78 (2.34)
Median [Min, Max]	4.00 [0.500, 12.0]	3.00 [0.400, 10.0]	3.00 [0.400, 12.0]
Missing	1 (1.3%)	0 (0%)	1 (0.6%)
cap_diameter_max			
Mean (SD)	10.3 (5.76)	8.29 (5.58)	9.20 (5.73)
Median [Min, Max]	10.0 [1.50, 30.0]	7.00 [1.00, 30.0]	8.00 [1.00, 30.0]
Missing	1 (1.3%)	0 (0%)	1 (0.6%)
cap_shape_.x			
0	23 (29.9%)	40 (41.7%)	63 (36.4%)
1	54 (70.1%)	56 (58.3%)	110 (63.6%)
cap_shape_.f			
0	41 (53.2%)	58 (60.4%)	99 (57.2%)
1	36 (46.8%)	38 (39.6%)	74 (42.8%)
cap_shape_.p			
0	67 (87.0%)	91 (94.8%)	158 (91.3%)
1	10 (13.0%)	5 (5.2%)	15 (8.7%)
cap_shape_.b			
0	72 (93.5%)	78 (81.3%)	150 (86.7%)
1	5 (6.5%)	18 (18.8%)	23 (13.3%)
cap_shape_.c			
0	73 (94.8%)	92 (95.8%)	165 (95.4%)
1	4 (5.2%)	4 (4.2%)	8 (4.6%)
cap_shape_.s			
0	60 (77.9%)	77 (80.2%)	137 (79.2%)
1	17 (22.1%)	19 (19.8%)	36 (20.8%)
cap_shape_.o			
0	73 (94.8%)	88 (91.7%)	161 (93.1%)
1	4 (5.2%)	8 (8.3%)	12 (6.9%)
Cap_surface_.g			
0	51 (66.2%)	66 (68.8%)	117 (67.6%)
1	7 (9.1%)	9 (9.4%)	16 (9.2%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.h			
0	45 (58.4%)	62 (64.6%)	107 (61.8%)
1	13 (16.9%)	13 (13.5%)	26 (15.0%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.t			

	e	p	Overall
0	43 (55.8%)	53 (55.2%)	96 (55.5%)
1	15 (19.5%)	22 (22.9%)	37 (21.4%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.y			
0	46 (59.7%)	64 (66.7%)	110 (63.6%)
1	12 (15.6%)	11 (11.5%)	23 (13.3%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.e			
0	54 (70.1%)	68 (70.8%)	122 (70.5%)
1	4 (5.2%)	7 (7.3%)	11 (6.4%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.s			
0	40 (51.9%)	60 (62.5%)	100 (57.8%)
1	18 (23.4%)	15 (15.6%)	33 (19.1%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.l			
0	56 (72.7%)	73 (76.0%)	129 (74.6%)
1	2 (2.6%)	2 (2.1%)	4 (2.3%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.d			
0	50 (64.9%)	65 (67.7%)	115 (66.5%)
1	8 (10.4%)	10 (10.4%)	18 (10.4%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.w			
0	55 (71.4%)	70 (72.9%)	125 (72.3%)
1	3 (3.9%)	5 (5.2%)	8 (4.6%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.i			
0	56 (72.7%)	68 (70.8%)	124 (71.7%)
1	2 (2.6%)	7 (7.3%)	9 (5.2%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
Cap_surface_.k			
0	57 (74.0%)	66 (68.8%)	123 (71.1%)
1	1 (1.3%)	9 (9.4%)	10 (5.8%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
cap_color_.e			
0	70 (90.9%)	78 (81.3%)	148 (85.5%)
1	7 (9.1%)	18 (18.8%)	25 (14.5%)
cap_color_.o			
0	70 (90.9%)	81 (84.4%)	151 (87.3%)
1	7 (9.1%)	15 (15.6%)	22 (12.7%)
cap_color_.n			
0	24 (31.2%)	39 (40.6%)	63 (36.4%)
1	53 (68.8%)	57 (59.4%)	110 (63.6%)
cap_color_.g			
0	63 (81.8%)	82 (85.4%)	145 (83.8%)
1	14 (18.2%)	14 (14.6%)	28 (16.2%)
cap_color_.r			
0	75 (97.4%)	85 (88.5%)	160 (92.5%)
1	2 (2.6%)	11 (11.5%)	13 (7.5%)
cap_color_.w			
0	60 (77.9%)	78 (81.3%)	138 (79.8%)

	e	p	Overall
1	17 (22.1%)	18 (18.8%)	35 (20.2%)
cap_color_.y			
0	61 (79.2%)	68 (70.8%)	129 (74.6%)
1	16 (20.8%)	28 (29.2%)	44 (25.4%)
cap_color_.p			
0	73 (94.8%)	89 (92.7%)	162 (93.6%)
1	4 (5.2%)	7 (7.3%)	11 (6.4%)
cap_color_.b			
0	72 (93.5%)	94 (97.9%)	166 (96.0%)
1	5 (6.5%)	2 (2.1%)	7 (4.0%)
cap_color_.u			
0	72 (93.5%)	91 (94.8%)	163 (94.2%)
1	5 (6.5%)	5 (5.2%)	10 (5.8%)
cap_color_.l			
0	73 (94.8%)	94 (97.9%)	167 (96.5%)
1	4 (5.2%)	2 (2.1%)	6 (3.5%)
cap_color_.k			
0	74 (96.1%)	90 (93.8%)	164 (94.8%)
1	3 (3.9%)	6 (6.3%)	9 (5.2%)
does_bruise_or_bleed_.f			
0	14 (18.2%)	16 (16.7%)	30 (17.3%)
1	63 (81.8%)	80 (83.3%)	143 (82.7%)
does_bruise_or_bleed_.t			
0	63 (81.8%)	80 (83.3%)	143 (82.7%)
1	14 (18.2%)	16 (16.7%)	30 (17.3%)
gill_attachment_.e			
0	57 (74.0%)	72 (75.0%)	129 (74.6%)
1	10 (13.0%)	6 (6.3%)	16 (9.2%)
Missing	10 (13.0%)	18 (18.8%)	28 (16.2%)
gill_attachment_.a			
0	51 (66.2%)	54 (56.3%)	105 (60.7%)
1	16 (20.8%)	24 (25.0%)	40 (23.1%)
Missing	10 (13.0%)	18 (18.8%)	28 (16.2%)
gill_attachment_.d			
0	53 (68.8%)	59 (61.5%)	112 (64.7%)
1	14 (18.2%)	19 (19.8%)	33 (19.1%)
Missing	10 (13.0%)	18 (18.8%)	28 (16.2%)
gill_attachment_.s			
0	60 (77.9%)	69 (71.9%)	129 (74.6%)
1	7 (9.1%)	9 (9.4%)	16 (9.2%)
Missing	10 (13.0%)	18 (18.8%)	28 (16.2%)
gill_attachment_.x			
0	58 (75.3%)	66 (68.8%)	124 (71.7%)
1	9 (11.7%)	12 (12.5%)	21 (12.1%)
Missing	10 (13.0%)	18 (18.8%)	28 (16.2%)
gill_attachment_.p			
0	55 (71.4%)	73 (76.0%)	128 (74.0%)
1	12 (15.6%)	5 (5.2%)	17 (9.8%)
Missing	10 (13.0%)	18 (18.8%)	28 (16.2%)
gill_attachment_.f			
0	63 (81.8%)	72 (75.0%)	135 (78.0%)
1	4 (5.2%)	6 (6.3%)	10 (5.8%)

	e	p	Overall
Missing	10 (13.0%)	18 (18.8%)	28 (16.2%)
gill_spacing_.c			
0	17 (22.1%)	15 (15.6%)	32 (18.5%)
1	29 (37.7%)	41 (42.7%)	70 (40.5%)
Missing	31 (40.3%)	40 (41.7%)	71 (41.0%)
gill_spacing_.d			
0	33 (42.9%)	47 (49.0%)	80 (46.2%)
1	13 (16.9%)	9 (9.4%)	22 (12.7%)
Missing	31 (40.3%)	40 (41.7%)	71 (41.0%)
gill_spacing_.f			
0	42 (54.5%)	50 (52.1%)	92 (53.2%)
1	4 (5.2%)	6 (6.3%)	10 (5.8%)
Missing	31 (40.3%)	40 (41.7%)	71 (41.0%)
gill_color_.w			
0	39 (50.6%)	61 (63.5%)	100 (57.8%)
1	38 (49.4%)	35 (36.5%)	73 (42.2%)
gill_color_.n			
0	62 (80.5%)	64 (66.7%)	126 (72.8%)
1	15 (19.5%)	32 (33.3%)	47 (27.2%)
gill_color_.p			
0	65 (84.4%)	80 (83.3%)	145 (83.8%)
1	12 (15.6%)	16 (16.7%)	28 (16.2%)
gill_color_.u			
0	74 (96.1%)	92 (95.8%)	166 (96.0%)
1	3 (3.9%)	4 (4.2%)	7 (4.0%)
gill_color_.b			
0	74 (96.1%)	94 (97.9%)	168 (97.1%)
1	3 (3.9%)	2 (2.1%)	5 (2.9%)
gill_color_.g			
0	67 (87.0%)	83 (86.5%)	150 (86.7%)
1	10 (13.0%)	13 (13.5%)	23 (13.3%)
gill_color_.y			
0	60 (77.9%)	69 (71.9%)	129 (74.6%)
1	17 (22.1%)	27 (28.1%)	44 (25.4%)
gill_color_.r			
0	75 (97.4%)	90 (93.8%)	165 (95.4%)
1	2 (2.6%)	6 (6.3%)	8 (4.6%)
gill_color_.e			
0	75 (97.4%)	92 (95.8%)	167 (96.5%)
1	2 (2.6%)	4 (4.2%)	6 (3.5%)
gill_color_.o			
0	72 (93.5%)	88 (91.7%)	160 (92.5%)
1	5 (6.5%)	8 (8.3%)	13 (7.5%)
gill_color_.k			
0	71 (92.2%)	87 (90.6%)	158 (91.3%)
1	6 (7.8%)	9 (9.4%)	15 (8.7%)
gill_color_.f			
0	73 (94.8%)	90 (93.8%)	163 (94.2%)
1	4 (5.2%)	6 (6.3%)	10 (5.8%)
stem_height_mean			
Mean (SD)	NA (NA)	0 (0)	0 (0)
Median [Min, Max]	NA [NA, NA]	0 [0, 0]	0 [0, 0]

	e	p	Overall
Missing	77 (100%)	93 (96.9%)	170 (98.3%)
stem_height_min			
Mean (SD)	4.52 (2.20)	4.27 (2.22)	4.38 (2.21)
Median [Min, Max]	4.00 [2.00, 15.0]	4.00 [1.00, 15.0]	4.00 [1.00, 15.0]
Missing	0 (0%)	3 (3.1%)	3 (1.7%)
stem_height_max			
Mean (SD)	9.58 (5.03)	8.57 (3.80)	9.03 (4.41)
Median [Min, Max]	8.00 [3.00, 35.0]	8.00 [2.00, 20.0]	8.00 [2.00, 35.0]
Missing	0 (0%)	3 (3.1%)	3 (1.7%)
stem_width_mean			
Mean (SD)	7.75 (4.50)	2.00 (3.61)	4.09 (4.72)
Median [Min, Max]	10.0 [1.00, 10.0]	1.00 [0, 10.0]	1.00 [0, 10.0]
Missing	73 (94.8%)	89 (92.7%)	162 (93.6%)
stem_width_min			
Mean (SD)	10.2 (6.90)	7.67 (5.65)	8.83 (6.36)
Median [Min, Max]	10.0 [1.00, 40.0]	5.00 [0.500, 20.0]	8.00 [0.500, 40.0]
Missing	4 (5.2%)	7 (7.3%)	11 (6.4%)
stem_width_max			
Mean (SD)	19.2 (15.9)	14.4 (11.8)	16.6 (13.9)
Median [Min, Max]	15.0 [2.00, 100]	10.0 [1.00, 60.0]	15.0 [1.00, 100]
Missing	4 (5.2%)	7 (7.3%)	11 (6.4%)
stem_root_.s			
0	6 (7.8%)	12 (12.5%)	18 (10.4%)
1	4 (5.2%)	5 (5.2%)	9 (5.2%)
Missing	67 (87.0%)	79 (82.3%)	146 (84.4%)
stem_root_.b			
0	4 (5.2%)	14 (14.6%)	18 (10.4%)
1	6 (7.8%)	3 (3.1%)	9 (5.2%)
Missing	67 (87.0%)	79 (82.3%)	146 (84.4%)
stem_root_.r			
0	10 (13.0%)	13 (13.5%)	23 (13.3%)
1	0 (0%)	4 (4.2%)	4 (2.3%)
Missing	67 (87.0%)	79 (82.3%)	146 (84.4%)
stem_root_.c			
0	10 (13.0%)	15 (15.6%)	25 (14.5%)
1	0 (0%)	2 (2.1%)	2 (1.2%)
Missing	67 (87.0%)	79 (82.3%)	146 (84.4%)
stem_root_.f			
0	10 (13.0%)	14 (14.6%)	24 (13.9%)
1	0 (0%)	3 (3.1%)	3 (1.7%)
Missing	67 (87.0%)	79 (82.3%)	146 (84.4%)
stem_surface_.y			
0	19 (24.7%)	31 (32.3%)	50 (28.9%)
1	5 (6.5%)	10 (10.4%)	15 (8.7%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_surface_.s			
0	13 (16.9%)	33 (34.4%)	46 (26.6%)
1	11 (14.3%)	8 (8.3%)	19 (11.0%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_surface_.k			
0	22 (28.6%)	38 (39.6%)	60 (34.7%)
1	2 (2.6%)	3 (3.1%)	5 (2.9%)

	e	p	Overall
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_surface_.i			
0	19 (24.7%)	32 (33.3%)	51 (29.5%)
1	5 (6.5%)	9 (9.4%)	14 (8.1%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_surface_.h			
0	24 (31.2%)	39 (40.6%)	63 (36.4%)
1	0 (0%)	2 (2.1%)	2 (1.2%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_surface_.t			
0	20 (26.0%)	37 (38.5%)	57 (32.9%)
1	4 (5.2%)	4 (4.2%)	8 (4.6%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_surface_.g			
0	24 (31.2%)	36 (37.5%)	60 (34.7%)
1	0 (0%)	5 (5.2%)	5 (2.9%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_surface_.f			
0	24 (31.2%)	38 (39.6%)	62 (35.8%)
1	0 (0%)	3 (3.1%)	3 (1.7%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem_color_.w			
0	34 (44.2%)	65 (67.7%)	99 (57.2%)
1	43 (55.8%)	31 (32.3%)	74 (42.8%)
stem_color_.y			
0	68 (88.3%)	73 (76.0%)	141 (81.5%)
1	9 (11.7%)	23 (24.0%)	32 (18.5%)
stem_color_.n			
0	50 (64.9%)	53 (55.2%)	103 (59.5%)
1	27 (35.1%)	43 (44.8%)	70 (40.5%)
stem_color_.b			
0	76 (98.7%)	96 (100%)	172 (99.4%)
1	1 (1.3%)	0 (0%)	1 (0.6%)
stem_color_.u			
0	75 (97.4%)	91 (94.8%)	166 (96.0%)
1	2 (2.6%)	5 (5.2%)	7 (4.0%)
stem_color_.l			
0	76 (98.7%)	95 (99.0%)	171 (98.8%)
1	1 (1.3%)	1 (1.0%)	2 (1.2%)
stem_color_.r			
0	76 (98.7%)	93 (96.9%)	169 (97.7%)
1	1 (1.3%)	3 (3.1%)	4 (2.3%)
stem_color_.p			
0	76 (98.7%)	93 (96.9%)	169 (97.7%)
1	1 (1.3%)	3 (3.1%)	4 (2.3%)
stem_color_.e			
0	74 (96.1%)	88 (91.7%)	162 (93.6%)
1	3 (3.9%)	8 (8.3%)	11 (6.4%)
stem_color_.k			
0	76 (98.7%)	93 (96.9%)	169 (97.7%)
1	1 (1.3%)	3 (3.1%)	4 (2.3%)
stem_color_.g			

	e	p	Overall
0	70 (90.9%)	89 (92.7%)	159 (91.9%)
1	7 (9.1%)	7 (7.3%)	14 (8.1%)
stem_color_.o			
0	72 (93.5%)	89 (92.7%)	161 (93.1%)
1	5 (6.5%)	7 (7.3%)	12 (6.9%)
stem_color_.f			
0	77 (100%)	93 (96.9%)	170 (98.3%)
1	0 (0%)	3 (3.1%)	3 (1.7%)
veil_type_.u			
1	3 (3.9%)	6 (6.3%)	9 (5.2%)
Missing	74 (96.1%)	90 (93.8%)	164 (94.8%)
veil_color_.w			
0	1 (1.3%)	4 (4.2%)	5 (2.9%)
1	8 (10.4%)	8 (8.3%)	16 (9.2%)
Missing	68 (88.3%)	84 (87.5%)	152 (87.9%)
veil_color_.y			
0	7 (9.1%)	12 (12.5%)	19 (11.0%)
1	2 (2.6%)	0 (0%)	2 (1.2%)
Missing	68 (88.3%)	84 (87.5%)	152 (87.9%)
veil_color_.e			
0	9 (11.7%)	11 (11.5%)	20 (11.6%)
1	0 (0%)	1 (1.0%)	1 (0.6%)
Missing	68 (88.3%)	84 (87.5%)	152 (87.9%)
veil_color_.n			
0	9 (11.7%)	10 (10.4%)	19 (11.0%)
1	0 (0%)	2 (2.1%)	2 (1.2%)
Missing	68 (88.3%)	84 (87.5%)	152 (87.9%)
veil_color_.u			
0	9 (11.7%)	11 (11.5%)	20 (11.6%)
1	0 (0%)	1 (1.0%)	1 (0.6%)
Missing	68 (88.3%)	84 (87.5%)	152 (87.9%)
veil_color_.k			
0	9 (11.7%)	11 (11.5%)	20 (11.6%)
1	0 (0%)	1 (1.0%)	1 (0.6%)
Missing	68 (88.3%)	84 (87.5%)	152 (87.9%)
has_ring_.t			
0	60 (77.9%)	70 (72.9%)	130 (75.1%)
1	17 (22.1%)	26 (27.1%)	43 (24.9%)
has_ring_.f			
0	17 (22.1%)	26 (27.1%)	43 (24.9%)
1	60 (77.9%)	70 (72.9%)	130 (75.1%)
ring_type_.ring_type_.g			
0	71 (92.2%)	90 (93.8%)	161 (93.1%)
1	2 (2.6%)	3 (3.1%)	5 (2.9%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.p			
0	71 (92.2%)	90 (93.8%)	161 (93.1%)
1	2 (2.6%)	3 (3.1%)	5 (2.9%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.e			
0	70 (90.9%)	88 (91.7%)	158 (91.3%)
1	3 (3.9%)	5 (5.2%)	8 (4.6%)

	e	p	Overall
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.l			
0	69 (89.6%)	91 (94.8%)	160 (92.5%)
1	4 (5.2%)	2 (2.1%)	6 (3.5%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.f			
0	12 (15.6%)	17 (17.7%)	29 (16.8%)
1	61 (79.2%)	76 (79.2%)	137 (79.2%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.m			
0	72 (93.5%)	93 (96.9%)	165 (95.4%)
1	1 (1.3%)	0 (0%)	1 (0.6%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.r			
0	70 (90.9%)	91 (94.8%)	161 (93.1%)
1	3 (3.9%)	2 (2.1%)	5 (2.9%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.z			
0	73 (94.8%)	87 (90.6%)	160 (92.5%)
1	0 (0%)	6 (6.3%)	6 (3.5%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
Spore_print_color_.w			
0	3 (3.9%)	11 (11.5%)	14 (8.1%)
1	2 (2.6%)	2 (2.1%)	4 (2.3%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
Spore_print_color_.p			
0	4 (5.2%)	10 (10.4%)	14 (8.1%)
1	1 (1.3%)	3 (3.1%)	4 (2.3%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
Spore_print_color_.k			
0	4 (5.2%)	7 (7.3%)	11 (6.4%)
1	1 (1.3%)	6 (6.3%)	7 (4.0%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
Spore_print_color_.r			
0	5 (6.5%)	12 (12.5%)	17 (9.8%)
1	0 (0%)	1 (1.0%)	1 (0.6%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
Spore_print_color_.u			
0	5 (6.5%)	12 (12.5%)	17 (9.8%)
1	0 (0%)	1 (1.0%)	1 (0.6%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
Spore_print_color_.n			
0	5 (6.5%)	10 (10.4%)	15 (8.7%)
1	0 (0%)	3 (3.1%)	3 (1.7%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
Spore_print_color_.g			
0	4 (5.2%)	13 (13.5%)	17 (9.8%)
1	1 (1.3%)	0 (0%)	1 (0.6%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
habitat_.d			
0	8 (10.4%)	14 (14.6%)	22 (12.7%)
1	69 (89.6%)	82 (85.4%)	151 (87.3%)

	e	p	Overall
habitat_.m			
0	69 (89.6%)	87 (90.6%)	156 (90.2%)
1	8 (10.4%)	9 (9.4%)	17 (9.8%)
habitat_.g			
0	62 (80.5%)	73 (76.0%)	135 (78.0%)
1	15 (19.5%)	23 (24.0%)	38 (22.0%)
habitat_.h			
0	72 (93.5%)	88 (91.7%)	160 (92.5%)
1	5 (6.5%)	8 (8.3%)	13 (7.5%)
habitat_.l			
0	66 (85.7%)	89 (92.7%)	155 (89.6%)
1	11 (14.3%)	7 (7.3%)	18 (10.4%)
habitat_.p			
0	77 (100%)	94 (97.9%)	171 (98.8%)
1	0 (0%)	2 (2.1%)	2 (1.2%)
habitat_.w			
0	76 (98.7%)	96 (100%)	172 (99.4%)
1	1 (1.3%)	0 (0%)	1 (0.6%)
habitat_.u			
0	76 (98.7%)	96 (100%)	172 (99.4%)
1	1 (1.3%)	0 (0%)	1 (0.6%)
ring_type_.ring_type_.g.1			
0	71 (92.2%)	90 (93.8%)	161 (93.1%)
1	2 (2.6%)	3 (3.1%)	5 (2.9%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.p.1			
0	71 (92.2%)	90 (93.8%)	161 (93.1%)
1	2 (2.6%)	3 (3.1%)	5 (2.9%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.e.1			
0	70 (90.9%)	88 (91.7%)	158 (91.3%)
1	3 (3.9%)	5 (5.2%)	8 (4.6%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.l.1			
0	69 (89.6%)	91 (94.8%)	160 (92.5%)
1	4 (5.2%)	2 (2.1%)	6 (3.5%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.f.1			
0	12 (15.6%)	17 (17.7%)	29 (16.8%)
1	61 (79.2%)	76 (79.2%)	137 (79.2%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.m.1			
0	72 (93.5%)	93 (96.9%)	165 (95.4%)
1	1 (1.3%)	0 (0%)	1 (0.6%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.r.1			
0	70 (90.9%)	91 (94.8%)	161 (93.1%)
1	3 (3.9%)	2 (2.1%)	5 (2.9%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
ring_type_.ring_type_.z.1			
0	73 (94.8%)	87 (90.6%)	160 (92.5%)
1	0 (0%)	6 (6.3%)	6 (3.5%)

	e	p	Overall
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)