# HW2
## Summary Report for Mushroom Dataset

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2025-03-20

## 目錄

## Data information

This dataset was compiled by Dennis Wagner on 05 September 2020. It includes 173 species of mushrooms with caps from various families and one entry for each species. Each species is identified as definitely edible, definitely poisonous, or of unknown edibility and not recommended (the latter class was combined with the poisonous class). Of the 20 variables, 17 are nominal and 3 are metrical. The values of each nominal variable are a set of possible values and for the metrical variables a range of possible values.

## Variable Definition

| Variable | Data Type | Definition |
|---|---|---|
| family | Character | String of the name of the family of mushroom species |
| name | Character | String of the of the mushroom species |
| class | Binary | poisonous=p, edibile=e |
| cap-diameter | Numeraical | float number(s) in cm, two values=min max, one value=mean |
| cap-shape | Categorical | bell=b, conical=c, convex=x, flat=f, sunken=s, spherical=p, others=o |
| cap-surface | Categorical | fibrous=i, grooves=g, scaly=y, smooth=s,shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w, fleshy=e |
| cap-color | Categorical | brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k |
| does-bruise-bleed | Categorical | bruises-or-bleeding=t,no=f |
| gill-attachment | Categorical | adnate=a, adnexed=x, decurrent=d, free=e, sinuate=s, pores=p, none=f, unknown=? |
| gill-spacing | Categorical | close=c, distant=d, none=f |
| gill-color | Categorical | see cap-color + none=f |
| stem-height | Numerical | float number(s) in cm, two values=min max, one value=mean |

| Variable | Data Type | Definition |
| --- | --- | --- |
| stem-width | Numerical | =bulbous=b, swollen=s, club=c, cup=u, equal=e, rhizomorphs=z, rooted=r |
| stem-surface | Categorical | see cap-surface + none=f |
| stem-color | Categorical | see cap-color + none=f |
| veil-type | Categorical | partial=p, universal=u |
| veil-color | Categorical | see cap-color + none=f |
| has-ring | Categorical | ring=t, none=f |
| ring-type | Categorical | cobwebby=c, evanescent=e, flaring=r, grooved=g, large=l, pendant=p, sheathing=s, zone=z, scaly=y, movable=m, none=f, unknown=? |
| spore-print-color | Categorical | see cap color |
| habitat | Categorical | grasses=g, leaves=l, meadows=m, paths=p, heaths=h, urban=u, waste=w, woods=d |
| season | Categorical | spring=s, summer=u, autumn=a, winter=w |

## Data Preprocessing

```python
import pandas as pd
import numpy as np

mushroom = pd.read_csv("primary_data.csv", sep=';')
df = pd.DataFrame(mushroom)

#
numeric_columns = ['cap-diameter', 'stem-height', 'stem-width']
categorical_columns = ['cap-shape', 'Cap-surface', 'cap-color', 'gill-color', 'stem-color', 'veil-color'

# 1.
for col in numeric_columns:

    df[col] = df[col].fillna('[]')
    df[col] = df[col].str.replace(r'[\[\]\s]', '', regex=True).str.split(',')
    df[col] = df[col].apply(lambda x: [item for item in x if item] if isinstance(x, list) else [])

    df[f'{col}_min'] = np.nan
    df[f'{col}_max'] = np.nan
    df[f'{col}_mean'] = np.nan

    for idx, values in df[col].items():
        if len(values) == 1:  #
            df.at[idx, f'{col}_mean'] = float(values[0])
        elif len(values) == 2:  #          ( + )/2=
            df.at[idx, f'{col}_min'] = float(values[0])
            df.at[idx, f'{col}_max'] = float(values[1])
            #df.at[idx, f'{col}_mean'] = (float(values[0]) + float(values[1])) / 2
    #
    df = df.drop(columns=[col])

# 2.      one-hot encoding
for col in categorical_columns:
```

```python
    df[col] = df[col].fillna('[]')
    df[col] = df[col].str.replace(r'[\[\]\s]', '', regex=True).str.split(',')
    df[col] = df[col].apply(lambda x: [item for item in x if item] if isinstance(x, list) else [])

    all_categories = set()
    for categories in df[col]:
        for category in categories:
            all_categories.add(category)
    all_categories = sorted(list(all_categories))

    for category in all_categories:
        df[f'{col}_{category}'] = df[col].apply(lambda x: str(1) if category in x else str(0))
    #
    df = df.drop(columns=[col])

#
print(df)
```

```
            family              name class  ... season_s season_u season_w
0        Amanita Family         Fly Agaric     p  ...        0        1        1
1        Amanita Family        Panther Cap     p  ...        0        1        0
2        Amanita Family  False Panther Cap     p  ...        0        1        0
3        Amanita Family        The Blusher     e  ...        0        1        0
4        Amanita Family          Death Cap     p  ...        0        1        0
..                  ...                ...   ...  ...      ...      ...      ...
168   Saddle-Cup Family       White Saddle     p  ...        0        1        0
169       Bracket Fungi     Elfin's Saddle     p  ...        0        1        0
170       Bracket Fungi      Turban Fungus     p  ...        1        1        0
171        Morel Family       Common Morel     e  ...        1        0        0
172   Jelly Discs Family      Jelly Babies     p  ...        0        1        0

[173 rows x 94 columns]
```

## Data Description

```r
# R Interface to Python
library(reticulate)
library(Hmisc)
mushroom_r <- py_to_r(py$df)
names(mushroom_r) <- gsub("-", "_", names(mushroom_r))
latex(describe(mushroom_r), file = "")
```

### mushroom_r
#### 94 Variables    173 Observations

**family**

| n | missing | distinct |
|---|---------|----------|
| 173 | 0 | 23 |

lowest : Amanita Family     Bolbitius Family   Bolete Family      Bracket Fungi      Chanterelle Family
highest: Russula Family     Saddle-Cup Family  Stropharia Family  Tricholoma Family  Wax Gill Family

**name**

| n | missing | distinct |
|---|---------|----------|
| 173 | 0 | 173 |

lowest : Amethyst Deceiver       Aniseed Funnel Cap      Apricot Fungus          Bare-toothed Russula    Bay Bolete
highest: Yellow-gilled Russula   Yellow-staining Mushroom Yellow-stemmed Bell Cap  Yellow Swamp Russula    Yellow Wax cap

## class

```
         n   missing   distinct
       173         0          2
```

```
Value            e     p
Frequency       77    96
Proportion   0.445 0.555
```

## does_bruise_or_bleed

```
         n   missing   distinct
       173         0          2
```

```
Value          [f]   [t]
Frequency      143    30
Proportion   0.827 0.173
```

## gill_attachment

```
         n   missing   distinct
       145        28          8
```

```
Value       [a, d]   [a]   [d]   [e]   [f]   [p]   [s]   [x]
Frequency        8    32    25    16    10    17    16    21
Proportion   0.055 0.221 0.172 0.110 0.069 0.117 0.110 0.145
```

## gill_spacing

```
         n   missing   distinct
       102        71          3
```

```
Value          [c]   [d]   [f]
Frequency       70    22    10
Proportion   0.686 0.216 0.098
```

## stem_root

```
         n   missing   distinct
        27       146          5
```

```
Value          [b]   [c]   [f]   [r]   [s]
Frequency        9     2     3     4     9
Proportion   0.333 0.074 0.111 0.148 0.333
```

## stem_surface

```
         n   missing   distinct
        65       108         14
```

```
Value          [f]   [g]   [h] [i, s] [i, t] [i, y]   [i] [k, s]   [k] [s, h]   [s]   [t]
Frequency        3     5     1      1      1      1    11      1     4      1    15     7
Proportion   0.046 0.077 0.015  0.015  0.015  0.015 0.169  0.015 0.062  0.015 0.231 0.108
```

```
Value       [y, s]   [y]
Frequency        1    13
Proportion   0.015 0.200
```

## veil_type

```
         n   missing   distinct   value
         9       164          1     [u]
```

```
Value          [u]
Frequency        9
Proportion       1
```

## has_ring

```
         n   missing   distinct
       173         0          2
```

```
Value          [f]   [t]
Frequency      130    43
Proportion   0.751 0.249
```

## ring_type

| n | missing | distinct |
|---|---|---|
| 166 | 7 | 13 |

| Value | [e, g] | [e] | [f] | [g, p] | [g] | [l, e] | [l, p] | [l, r] | [l] | [m] | [p] | [r] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 1 | 6 | 137 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 3 |
| Proportion | 0.006 | 0.036 | 0.825 | 0.012 | 0.012 | 0.006 | 0.006 | 0.012 | 0.012 | 0.006 | 0.012 | 0.018 |

| Value | [z] |
|---|---|
| Frequency | 6 |
| Proportion | 0.036 |

## Spore_print_color

| n | missing | distinct |
|---|---|---|
| 18 | 155 | 8 |

| Value | [g] | [k, r] | [k, u] | [k] | [n] | [p, w] | [p] | [w] |
|---|---|---|---|---|---|---|---|---|
| Frequency | 1 | 1 | 1 | 5 | 3 | 1 | 3 | 3 |
| Proportion | 0.056 | 0.056 | 0.056 | 0.278 | 0.167 | 0.056 | 0.167 | 0.167 |

## cap_diameter_min

| n | missing | distinct | Info | Mean | pMedian | Gmd | .05 | .10 | .25 | .50 | .75 | .90 | .95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 172 | 1 | 13 | 0.976 | 3.776 | 3.5 | 2.533 | 1 | 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 | 10.0 | 12.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 2 | 4 | 1 | 17 | 39 | 24 | 26 | 29 | 11 | 4 | 9 | 4 | 2 |
| Proportion | 0.012 | 0.023 | 0.006 | 0.099 | 0.227 | 0.140 | 0.151 | 0.169 | 0.064 | 0.023 | 0.052 | 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 | .10 | .25 | .50 | .75 | .90 | .95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 172 | 1 | 19 | 0.991 | 9.199 | 8.5 | 6.147 | 2 | 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 | 10.0 | 12.0 | 14.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 3 | 1 | 4 | 7 | 6 | 12 | 18 | 16 | 7 | 16 | 3 | 28 | 18 | 3 |
| Proportion | 0.017 | 0.006 | 0.023 | 0.041 | 0.035 | 0.070 | 0.105 | 0.093 | 0.041 | 0.093 | 0.017 | 0.163 | 0.105 | 0.017 |

| Value | 15.0 | 18.0 | 20.0 | 25.0 | 30.0 |
|---|---|---|---|---|---|
| Frequency | 15 | 3 | 5 | 5 | 2 |
| Proportion | 0.087 | 0.017 | 0.029 | 0.029 | 0.012 |

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

## cap_diameter_mean

| n | missing | distinct | Info | Mean |
|---|---|---|---|---|
| 1 | 172 | 1 | 0 | 50 |

| Value | 50 |
|---|---|
| Frequency | 1 |
| Proportion | 1 |

## stem_height_min

| n | missing | distinct | Info | Mean | pMedian | Gmd | .05 | .10 | .25 | .50 | .75 | .90 | .95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 170 | 3 | 11 | 0.955 | 4.382 | 4 | 2.157 | 2 | 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 | .10 | .25 | .50 | .75 | .90 | .95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 170 | 3 | 18 | 0.976 | 9.029 | 8.5 | 4.205 | 4.45 | 5.00 | 6.00 | 8.00 | 10.00 | 15.00 | 15.00 |

| Value | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 | 15 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 1 | 2 | 6 | 14 | 25 | 16 | 37 | 2 | 35 | 1 | 12 | 1 | 10 | 1 |
| Proportion | 0.006 | 0.012 | 0.035 | 0.082 | 0.147 | 0.094 | 0.218 | 0.012 | 0.206 | 0.006 | 0.071 | 0.006 | 0.059 | 0.006 |

| Value | 20 | 25 | 30 | 35 |
|---|---|---|---|---|
| Frequency | 4 | 1 | 1 | 1 |
| Proportion | 0.024 | 0.006 | 0.006 | 0.006 |

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

## stem_height_mean

| n | missing | distinct | Info | Mean |
|---|---------|----------|------|------|
| 3 | 170 | 1 | 0 | 0 |

```
Value        0
Frequency    3
Proportion   1
```

## stem_width_min

| n | missing | distinct | Info | Mean | pMedian | Gmd | .05 | .10 | .25 | .50 | .75 | .90 | .95 |
|---|---------|----------|------|------|---------|-----|-----|-----|-----|-----|-----|-----|-----|
| 162 | 11 | 15 | 0.98 | 8.83 | 8 | 6.785 | 2 | 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  15.0  20.0  30.0
Frequency      1     6    17    12    12    19     7     1    10    38     1    20    16     1
Proportion 0.006 0.037 0.105 0.074 0.074 0.117 0.043 0.006 0.062 0.235 0.006 0.123 0.099 0.006

Value       40.0
Frequency      1
Proportion 0.006
```

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

## stem_width_max

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

```
Value          1     2     3     4     5     6     7     8    10    12    15    18    20    25
Frequency      1     5    10     9     5     3     3    17    15    11    19     4    26    10
Proportion 0.006 0.031 0.062 0.056 0.031 0.019 0.019 0.105 0.093 0.068 0.117 0.025 0.160 0.062

Value         30    40    50    60    80   100
Frequency     11     8     1     2     1     1
Proportion 0.068 0.049 0.006 0.012 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

## 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_f

| n | missing | distinct |
|---|---------|----------|
| 173 | 0 | 2 |

```
Value          0     1
Frequency     99    74
Proportion 0.572 0.428
```

## cap_shape_o

| n | missing | distinct |
|---|---------|----------|
| 173 | 0 | 2 |

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

## cap_shape_p

```
       n    missing    distinct
     173          0           2
```

```
Value          0      1
Frequency    158     15
Proportion 0.913 0.087
```

## cap_shape_s

```
       n    missing    distinct
     173          0           2
```

```
Value          0      1
Frequency    137     36
Proportion 0.792 0.208
```

## cap_shape_x

```
       n    missing    distinct
     173          0           2
```

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

## Cap_surface_d

```
       n    missing    distinct
     173          0           2
```

```
Value          0      1
Frequency    155     18
Proportion 0.896 0.104
```

## Cap_surface_e

```
       n    missing    distinct
     173          0           2
```

```
Value          0      1
Frequency    162     11
Proportion 0.936 0.064
```

## Cap_surface_g

```
       n    missing    distinct
     173          0           2
```

```
Value          0      1
Frequency    157     16
Proportion 0.908 0.092
```

## Cap_surface_h

```
       n    missing    distinct
     173          0           2
```

```
Value          0      1
Frequency    147     26
Proportion  0.85  0.15
```

## Cap_surface_i

```
       n    missing    distinct
     173          0           2
```

```
Value          0      1
Frequency    164      9
Proportion 0.948 0.052
```

## Cap_surface_k

```
       n    missing    distinct
     173          0           2
```

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

## Cap_surface_l

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    169     4
Proportion 0.977 0.023
```

## Cap_surface_s

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    140    33
Proportion 0.809 0.191
```

## Cap_surface_t

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    136    37
Proportion 0.786 0.214
```

## Cap_surface_w

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    165     8
Proportion 0.954 0.046
```

## Cap_surface_y

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    150    23
Proportion 0.867 0.133
```

## cap_color_b

```
    n  missing  distinct
  173        0         2
```

```
Value         0    1
Frequency   166    7
Proportion 0.96 0.04
```

## cap_color_e

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    148    25
Proportion 0.855 0.145
```

## cap_color_g

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    145    28
Proportion 0.838 0.162
```

## cap_color_k

```
    n  missing  distinct
  173        0         2
```

```
Value          0     1
Frequency    164     9
Proportion 0.948 0.052
```

## cap_color_l

```
     n   missing   distinct
   173         0          2
```

```
Value          0      1
Frequency    167      6
Proportion 0.965 0.035
```

## cap_color_n

```
     n   missing   distinct
   173         0          2
```

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

## cap_color_o

```
     n   missing   distinct
   173         0          2
```

```
Value          0      1
Frequency    151     22
Proportion 0.873 0.127
```

## cap_color_p

```
     n   missing   distinct
   173         0          2
```

```
Value          0      1
Frequency    162     11
Proportion 0.936 0.064
```

## cap_color_r

```
     n   missing   distinct
   173         0          2
```

```
Value          0      1
Frequency    160     13
Proportion 0.925 0.075
```

## cap_color_u

```
     n   missing   distinct
   173         0          2
```

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

## 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
```

## gill_color_b

```
     n   missing   distinct
   173         0          2
```

```
Value          0      1
Frequency    168      5
Proportion 0.971 0.029
```

## gill_color_e

```
      n   missing   distinct
    173         0          2
```

```
Value          0      1
Frequency    167      6
Proportion 0.965  0.035
```

## gill_color_f

```
      n   missing   distinct
    173         0          2
```

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

## gill_color_g

```
      n   missing   distinct
    173         0          2
```

```
Value          0      1
Frequency    150     23
Proportion 0.867  0.133
```

## gill_color_k

```
      n   missing   distinct
    173         0          2
```

```
Value          0      1
Frequency    158     15
Proportion 0.913  0.087
```

## gill_color_n

```
      n   missing   distinct
    173         0          2
```

```
Value          0      1
Frequency    126     47
Proportion 0.728  0.272
```

## gill_color_o

```
      n   missing   distinct
    173         0          2
```

```
Value          0      1
Frequency    160     13
Proportion 0.925  0.075
```

## gill_color_p

```
      n   missing   distinct
    173         0          2
```

```
Value          0      1
Frequency    145     28
Proportion 0.838  0.162
```

## gill_color_r

```
      n   missing   distinct
    173         0          2
```

```
Value          0      1
Frequency    165      8
Proportion 0.954  0.046
```

## gill_color_u

```
      n   missing   distinct
    173         0          2
```

```
Value          0     1
Frequency    166     7
Proportion 0.96  0.04
```

### gill_color_w

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    100     73
Proportion 0.578  0.422
```

### gill_color_y

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    129     44
Proportion 0.746  0.254
```

### stem_color_b

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    172      1
Proportion 0.994  0.006
```

### stem_color_e

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    162     11
Proportion 0.936  0.064
```

### stem_color_f

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    170      3
Proportion 0.983  0.017
```

### stem_color_g

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    159     14
Proportion 0.919  0.081
```

### stem_color_k

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    169      4
Proportion 0.977  0.023
```

### stem_color_l

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    171      2
Proportion 0.988  0.012
```

### stem_color_n

```
       n    missing   distinct
     173          0          2
```

```
Value          0      1
Frequency    103     70
Proportion 0.595  0.405
```

## stem_color_o

```
       n   missing   distinct
     173         0          2
```

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

## stem_color_p

```
       n   missing   distinct
     173         0          2
```

```
Value           0     1
Frequency     169     4
Proportion  0.977 0.023
```

## stem_color_r

```
       n   missing   distinct
     173         0          2
```

```
Value           0     1
Frequency     169     4
Proportion  0.977 0.023
```

## stem_color_u

```
       n   missing   distinct
     173         0          2
```

```
Value           0     1
Frequency     166     7
Proportion   0.96 0.04
```

## 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
```

## veil_color_e

```
       n   missing   distinct
     173         0          2
```

```
Value           0     1
Frequency     172     1
Proportion  0.994 0.006
```

## veil_color_k

```
       n   missing   distinct
     173         0          2
```

```
Value           0     1
Frequency     172     1
Proportion  0.994 0.006
```

## veil_color_n

```
       n   missing   distinct
     173         0          2
```

```
Value           0     1
Frequency     171     2
Proportion  0.988 0.012
```

## veil_color_u

```
      n  missing  distinct
    173        0         2
```

```
Value          0     1
Frequency    172     1
Proportion 0.994 0.006
```

## veil_color_w

```
      n  missing  distinct
    173        0         2
```

```
Value          0     1
Frequency    157    16
Proportion 0.908 0.092
```

## veil_color_y

```
      n  missing  distinct
    173        0         2
```

```
Value          0     1
Frequency    171     2
Proportion 0.988 0.012
```

## habitat_d

```
      n  missing  distinct
    173        0         2
```

```
Value          0     1
Frequency     22   151
Proportion 0.127 0.873
```

## 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_m

```
      n  missing  distinct
    173        0         2
```

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

## habitat_p

```
      n  missing  distinct
    173        0         2
```

```
Value          0     1
Frequency    171     2
Proportion 0.988 0.012
```

## habitat_u

```
     n   missing   distinct
   173         0          2

Value           0     1
Frequency     172     1
Proportion  0.994 0.006
```

## habitat_w

```
     n   missing   distinct
   173         0          2

Value           0     1
Frequency     172     1
Proportion  0.994 0.006
```

## season_a

```
     n   missing   distinct
   173         0          2

Value           0     1
Frequency       5   168
Proportion  0.029 0.971
```

## season_s

```
     n   missing   distinct
   173         0          2

Value           0     1
Frequency     150    23
Proportion  0.867 0.133
```

## season_u

```
     n   missing   distinct
   173         0          2

Value           0     1
Frequency      33   140
Proportion  0.191 0.809
```

## season_w

```
     n   missing   distinct
   173         0          2

Value           0     1
Frequency     132    41
Proportion  0.763 0.237
```

## Table One

```r
library(table1)
table1(~ does_bruise_or_bleed+gill_attachment+gill_spacing+stem_root+stem_surface+veil_type+has_ring+rir
       data = mushroom_r)
```

|  | e | p | Overall |
|---|---|---|---|
|  | (N=77) | (N=96) | (N=173) |
| **does_bruise_or_bleed** |  |  |  |
| [f] | 63 (81.8%) | 80 (83.3%) | 143 (82.7%) |
| [t] | 14 (18.2%) | 16 (16.7%) | 30 (17.3%) |
| **gill_attachment** |  |  |  |
| [a, d] | 5 (6.5%) | 3 (3.1%) | 8 (4.6%) |
| [a] | 11 (14.3%) | 21 (21.9%) | 32 (18.5%) |
| [d] | 9 (11.7%) | 16 (16.7%) | 25 (14.5%) |
| [e] | 10 (13.0%) | 6 (6.3%) | 16 (9.2%) |
| [f] | 4 (5.2%) | 6 (6.3%) | 10 (5.8%) |
| [p] | 12 (15.6%) | 5 (5.2%) | 17 (9.8%) |

|  | e | p | Overall |
|---|---|---|---|
| [s] | 7 (9.1%) | 9 (9.4%) | 16 (9.2%) |
| [x] | 9 (11.7%) | 12 (12.5%) | 21 (12.1%) |
| Missing | 10 (13.0%) | 18 (18.8%) | 28 (16.2%) |
| gill_spacing |  |  |  |
| [c] | 29 (37.7%) | 41 (42.7%) | 70 (40.5%) |
| [d] | 13 (16.9%) | 9 (9.4%) | 22 (12.7%) |
| [f] | 4 (5.2%) | 6 (6.3%) | 10 (5.8%) |
| Missing | 31 (40.3%) | 40 (41.7%) | 71 (41.0%) |
| stem_root |  |  |  |
| [b] | 6 (7.8%) | 3 (3.1%) | 9 (5.2%) |
| [s] | 4 (5.2%) | 5 (5.2%) | 9 (5.2%) |
| [c] | 0 (0%) | 2 (2.1%) | 2 (1.2%) |
| [f] | 0 (0%) | 3 (3.1%) | 3 (1.7%) |
| [r] | 0 (0%) | 4 (4.2%) | 4 (2.3%) |
| Missing | 67 (87.0%) | 79 (82.3%) | 146 (84.4%) |
| stem_surface |  |  |  |
| [i, t] | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| [i] | 4 (5.2%) | 7 (7.3%) | 11 (6.4%) |
| [k, s] | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| [k] | 1 (1.3%) | 3 (3.1%) | 4 (2.3%) |
| [s] | 9 (11.7%) | 6 (6.3%) | 15 (8.7%) |
| [t] | 3 (3.9%) | 4 (4.2%) | 7 (4.0%) |
| [y, s] | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| [y] | 4 (5.2%) | 9 (9.4%) | 13 (7.5%) |
| [f] | 0 (0%) | 3 (3.1%) | 3 (1.7%) |
| [g] | 0 (0%) | 5 (5.2%) | 5 (2.9%) |
| [h] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| [i, s] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| [i, y] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| [s, h] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| Missing | 53 (68.8%) | 55 (57.3%) | 108 (62.4%) |
| veil_type |  |  |  |
| [u] | 3 (3.9%) | 6 (6.3%) | 9 (5.2%) |
| Missing | 74 (96.1%) | 90 (93.8%) | 164 (94.8%) |
| has_ring |  |  |  |
| [f] | 60 (77.9%) | 70 (72.9%) | 130 (75.1%) |
| [t] | 17 (22.1%) | 26 (27.1%) | 43 (24.9%) |
| ring_type |  |  |  |
| [e] | 3 (3.9%) | 3 (3.1%) | 6 (3.5%) |
| [f] | 61 (79.2%) | 76 (79.2%) | 137 (79.2%) |
| [g] | 2 (2.6%) | 0 (0%) | 2 (1.2%) |
| [l, p] | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| [l, r] | 2 (2.6%) | 0 (0%) | 2 (1.2%) |
| [l] | 1 (1.3%) | 1 (1.0%) | 2 (1.2%) |
| [m] | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| [p] | 1 (1.3%) | 1 (1.0%) | 2 (1.2%) |
| [r] | 1 (1.3%) | 2 (2.1%) | 3 (1.7%) |
| [e, g] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| [g, p] | 0 (0%) | 2 (2.1%) | 2 (1.2%) |
| [l, e] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| [z] | 0 (0%) | 6 (6.3%) | 6 (3.5%) |
| Missing | 4 (5.2%) | 3 (3.1%) | 7 (4.0%) |

|  | e | p | Overall |
|---|---|---|---|
| Spore_print_color | | | |
| [g] | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| [k] | 1 (1.3%) | 4 (4.2%) | 5 (2.9%) |
| [p] | 1 (1.3%) | 2 (2.1%) | 3 (1.7%) |
| [w] | 2 (2.6%) | 1 (1.0%) | 3 (1.7%) |
| [k, r] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| [k, u] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| [n] | 0 (0%) | 3 (3.1%) | 3 (1.7%) |
| [p, w] | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| Missing | 72 (93.5%) | 83 (86.5%) | 155 (89.6%) |
| 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_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%) |
| 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_height_mean | | | |
| Mean (SD) | NA (NA) | 0 (0) | 0 (0) |
| Median [Min, Max] | NA [NA, NA] | 0 [0, 0] | 0 [0, 0] |
| Missing | 77 (100%) | 93 (96.9%) | 170 (98.3%) |
| 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_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%) |
| 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%) |

| | e | p | Overall |
|---|---|---|---|
| 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_o | | | |
| 0 | 73 (94.8%) | 88 (91.7%) | 161 (93.1%) |
| 1 | 4 (5.2%) | 8 (8.3%) | 12 (6.9%) |
| 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_s | | | |
| 0 | 60 (77.9%) | 77 (80.2%) | 137 (79.2%) |
| 1 | 17 (22.1%) | 19 (19.8%) | 36 (20.8%) |
| cap_shape_x | | | |
| 0 | 23 (29.9%) | 40 (41.7%) | 63 (36.4%) |
| 1 | 54 (70.1%) | 56 (58.3%) | 110 (63.6%) |
| Cap_surface_d | | | |
| 0 | 69 (89.6%) | 86 (89.6%) | 155 (89.6%) |
| 1 | 8 (10.4%) | 10 (10.4%) | 18 (10.4%) |
| Cap_surface_e | | | |
| 0 | 73 (94.8%) | 89 (92.7%) | 162 (93.6%) |
| 1 | 4 (5.2%) | 7 (7.3%) | 11 (6.4%) |
| Cap_surface_g | | | |
| 0 | 70 (90.9%) | 87 (90.6%) | 157 (90.8%) |
| 1 | 7 (9.1%) | 9 (9.4%) | 16 (9.2%) |
| Cap_surface_h | | | |
| 0 | 64 (83.1%) | 83 (86.5%) | 147 (85.0%) |
| 1 | 13 (16.9%) | 13 (13.5%) | 26 (15.0%) |
| Cap_surface_i | | | |
| 0 | 75 (97.4%) | 89 (92.7%) | 164 (94.8%) |
| 1 | 2 (2.6%) | 7 (7.3%) | 9 (5.2%) |
| Cap_surface_k | | | |
| 0 | 76 (98.7%) | 87 (90.6%) | 163 (94.2%) |
| 1 | 1 (1.3%) | 9 (9.4%) | 10 (5.8%) |
| Cap_surface_l | | | |
| 0 | 75 (97.4%) | 94 (97.9%) | 169 (97.7%) |
| 1 | 2 (2.6%) | 2 (2.1%) | 4 (2.3%) |
| Cap_surface_s | | | |
| 0 | 59 (76.6%) | 81 (84.4%) | 140 (80.9%) |
| 1 | 18 (23.4%) | 15 (15.6%) | 33 (19.1%) |
| Cap_surface_t | | | |
| 0 | 62 (80.5%) | 74 (77.1%) | 136 (78.6%) |
| 1 | 15 (19.5%) | 22 (22.9%) | 37 (21.4%) |
| Cap_surface_w | | | |
| 0 | 74 (96.1%) | 91 (94.8%) | 165 (95.4%) |
| 1 | 3 (3.9%) | 5 (5.2%) | 8 (4.6%) |
| Cap_surface_y | | | |
| 0 | 65 (84.4%) | 85 (88.5%) | 150 (86.7%) |
| 1 | 12 (15.6%) | 11 (11.5%) | 23 (13.3%) |
| 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_e | | | |

|  | e | p | Overall |
|---|---|---|---|
| 0 | 70 (90.9%) | 78 (81.3%) | 148 (85.5%) |
| 1 | 7 (9.1%) | 18 (18.8%) | 25 (14.5%) |
| 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_k | | | |
| 0 | 74 (96.1%) | 90 (93.8%) | 164 (94.8%) |
| 1 | 3 (3.9%) | 6 (6.3%) | 9 (5.2%) |
| 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_n | | | |
| 0 | 24 (31.2%) | 39 (40.6%) | 63 (36.4%) |
| 1 | 53 (68.8%) | 57 (59.4%) | 110 (63.6%) |
| 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_p | | | |
| 0 | 73 (94.8%) | 89 (92.7%) | 162 (93.6%) |
| 1 | 4 (5.2%) | 7 (7.3%) | 11 (6.4%) |
| 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_u | | | |
| 0 | 72 (93.5%) | 91 (94.8%) | 163 (94.2%) |
| 1 | 5 (6.5%) | 5 (5.2%) | 10 (5.8%) |
| cap_color_w | | | |
| 0 | 60 (77.9%) | 78 (81.3%) | 138 (79.8%) |
| 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%) |
| 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_e | | | |
| 0 | 75 (97.4%) | 92 (95.8%) | 167 (96.5%) |
| 1 | 2 (2.6%) | 4 (4.2%) | 6 (3.5%) |
| gill_color_f | | | |
| 0 | 73 (94.8%) | 90 (93.8%) | 163 (94.2%) |
| 1 | 4 (5.2%) | 6 (6.3%) | 10 (5.8%) |
| 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_k | | | |
| 0 | 71 (92.2%) | 87 (90.6%) | 158 (91.3%) |
| 1 | 6 (7.8%) | 9 (9.4%) | 15 (8.7%) |
| 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_o | | | |
| 0 | 72 (93.5%) | 88 (91.7%) | 160 (92.5%) |

|  | e | p | Overall |
| --- | --- | --- | --- |
| 1 | 5 (6.5%) | 8 (8.3%) | 13 (7.5%) |
| 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_r |  |  |  |
| 0 | 75 (97.4%) | 90 (93.8%) | 165 (95.4%) |
| 1 | 2 (2.6%) | 6 (6.3%) | 8 (4.6%) |
| 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_w |  |  |  |
| 0 | 39 (50.6%) | 61 (63.5%) | 100 (57.8%) |
| 1 | 38 (49.4%) | 35 (36.5%) | 73 (42.2%) |
| gill_color_y |  |  |  |
| 0 | 60 (77.9%) | 69 (71.9%) | 129 (74.6%) |
| 1 | 17 (22.1%) | 27 (28.1%) | 44 (25.4%) |
| stem_color_b |  |  |  |
| 0 | 76 (98.7%) | 96 (100%) | 172 (99.4%) |
| 1 | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| 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_f |  |  |  |
| 0 | 77 (100%) | 93 (96.9%) | 170 (98.3%) |
| 1 | 0 (0%) | 3 (3.1%) | 3 (1.7%) |
| stem_color_g |  |  |  |
| 0 | 70 (90.9%) | 89 (92.7%) | 159 (91.9%) |
| 1 | 7 (9.1%) | 7 (7.3%) | 14 (8.1%) |
| 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_l |  |  |  |
| 0 | 76 (98.7%) | 95 (99.0%) | 171 (98.8%) |
| 1 | 1 (1.3%) | 1 (1.0%) | 2 (1.2%) |
| 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_o |  |  |  |
| 0 | 72 (93.5%) | 89 (92.7%) | 161 (93.1%) |
| 1 | 5 (6.5%) | 7 (7.3%) | 12 (6.9%) |
| 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_r |  |  |  |
| 0 | 76 (98.7%) | 93 (96.9%) | 169 (97.7%) |
| 1 | 1 (1.3%) | 3 (3.1%) | 4 (2.3%) |
| 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_w |  |  |  |
| 0 | 34 (44.2%) | 65 (67.7%) | 99 (57.2%) |
| 1 | 43 (55.8%) | 31 (32.3%) | 74 (42.8%) |

|  | e | p | Overall |
|---|---|---|---|
| **stem_color_y** | | | |
| 0 | 68 (88.3%) | 73 (76.0%) | 141 (81.5%) |
| 1 | 9 (11.7%) | 23 (24.0%) | 32 (18.5%) |
| **veil_color_e** | | | |
| 0 | 77 (100%) | 95 (99.0%) | 172 (99.4%) |
| 1 | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| **veil_color_k** | | | |
| 0 | 77 (100%) | 95 (99.0%) | 172 (99.4%) |
| 1 | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| **veil_color_n** | | | |
| 0 | 77 (100%) | 94 (97.9%) | 171 (98.8%) |
| 1 | 0 (0%) | 2 (2.1%) | 2 (1.2%) |
| **veil_color_u** | | | |
| 0 | 77 (100%) | 95 (99.0%) | 172 (99.4%) |
| 1 | 0 (0%) | 1 (1.0%) | 1 (0.6%) |
| **veil_color_w** | | | |
| 0 | 69 (89.6%) | 88 (91.7%) | 157 (90.8%) |
| 1 | 8 (10.4%) | 8 (8.3%) | 16 (9.2%) |
| **veil_color_y** | | | |
| 0 | 75 (97.4%) | 96 (100%) | 171 (98.8%) |
| 1 | 2 (2.6%) | 0 (0%) | 2 (1.2%) |
| **habitat_d** | | | |
| 0 | 8 (10.4%) | 14 (14.6%) | 22 (12.7%) |
| 1 | 69 (89.6%) | 82 (85.4%) | 151 (87.3%) |
| **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_m** | | | |
| 0 | 69 (89.6%) | 87 (90.6%) | 156 (90.2%) |
| 1 | 8 (10.4%) | 9 (9.4%) | 17 (9.8%) |
| **habitat_p** | | | |
| 0 | 77 (100%) | 94 (97.9%) | 171 (98.8%) |
| 1 | 0 (0%) | 2 (2.1%) | 2 (1.2%) |
| **habitat_u** | | | |
| 0 | 76 (98.7%) | 96 (100%) | 172 (99.4%) |
| 1 | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| **habitat_w** | | | |
| 0 | 76 (98.7%) | 96 (100%) | 172 (99.4%) |
| 1 | 1 (1.3%) | 0 (0%) | 1 (0.6%) |
| **season_a** | | | |
| 0 | 3 (3.9%) | 2 (2.1%) | 5 (2.9%) |
| 1 | 74 (96.1%) | 94 (97.9%) | 168 (97.1%) |
| **season_s** | | | |
| 0 | 65 (84.4%) | 85 (88.5%) | 150 (86.7%) |
| 1 | 12 (15.6%) | 11 (11.5%) | 23 (13.3%) |
| **season_u** | | | |

|  | e | p | Overall |
|---|---|---|---|
| 0 | 16 (20.8%) | 17 (17.7%) | 33 (19.1%) |
| 1 | 61 (79.2%) | 79 (82.3%) | 140 (80.9%) |
| season_w |  |  |  |
| 0 | 52 (67.5%) | 80 (83.3%) | 132 (76.3%) |
| 1 | 25 (32.5%) | 16 (16.7%) | 41 (23.7%) |