SC_HW2

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Variable Definition:

According to the “primary_data_meta.txt”, the detailed data coding book is presented in Figure 1.

Variable	Data Type	Definition	Note
family	nominal	Name of the family of mushroom species (multinomial)	
name	nominal	Name of the mushroom species (multinomial)	
class	nominal	The class of the mushroom species (binary)	poisonous=p, edibile=e
cap-diameter	metrical	Diameter of the cap in cm	[min., max.] or [mean]
cap-shape	nominal	Shapes of the cap	bell=b, conical=c, convex=x, flat=f, sunken=s, spherical=p, others=o
cap-surface	nominal	Types of the surface of the cap	fibrous=i, grooves=g, scaly=y, smooth=s, shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w, fleshy=e
cap-color	nominal	Colors of the cap	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	nominal	Indicates bruising or bleeding or no	bruises-or-bleeding=t,no=f
gill-attachment	nominal	Types of gill attachment	adnate=a, adnexed=x, decurrent=d, free=e, sinuate=s, pores=p, none=f, unknown=?
gill-spacing	nominal	Spacing options of gill	close=c, distant=d, none=f
gill-color	nominal	Gill color aligns with cap color plus none	see cap-color + none=f
stem-height	metrical	Height of the stem in cm	[min., max.] or [mean]

Variable	Data Type	Definition	Note
stem-width	metrical	Width of the stem in mm	[min., max.] or [mean]
stem-root	nominal	Root types of stem	bulbous=b, swollen=s, club=c, cup=u, equal=e, rhizomorphs=z, rooted=r
stem-surface	nominal	Surface type of stem aligns with cap surface plus none	see cap-surface + none=f
stem-color	nominal	Stem color aligns with cap color plus none	see cap-color + none=f
veil-type	nominal	Types of veil	partial=p, universal=u
veil-color	nominal	Veil color aligns with cap color plus none	see cap-color + none=f
has-ring	nominal	Indicates presence of a ring or none	ring=t, none=f
ring-type	nominal	Types of ring	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	nominal	Color of spore print aligns with cap color	see cap color
habitat	nominal	Habitat types	grasses=g, leaves=l, meadows=m, paths=p, heaths=h, urban=u, waste=w, woods=d
season	nominal	Seasons	spring=s, summer=u, autumn=a, winter=w

Figure 1

```
# 資料整理
library(readr) ; library(dplyr) ; library(tidyr) ; library(stringr)
```

```
Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

    filter, lag
```

```
The following objects are masked from 'package:base':

    intersect, setdiff, setequal, union
```

```
dt <- read_delim("primary_data.csv", delim = ";", escape_double = FALSE, trim_ws = TRUE)
```

```
Rows: 173 Columns: 23

── Column specification ────────────────────────────────────────────────────────
Delimiter: ";"
chr (23): family, name, class, cap-diameter, cap-shape, Cap-surface, cap-col...

ℹ Use `spec()` to retrieve the full column specification for this data.
ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
# Convert into nominal
dt <- dt %>% mutate(across(-c(family, name, `cap-diameter`, `stem-height`, `stem-width`), as.f

# 處理 metrical 變數
dt <- dt %>% mutate(
    # cap-diameter
    cap_diameter_min = ifelse(grepl(",", `cap-diameter`), as.numeric(str_extract(`cap-diameter
    cap_diameter_max = ifelse(grepl(",", `cap-diameter`), as.numeric(str_extract(`cap-diameter
    cap_diameter_mean = as.numeric(str_extract(`cap-diameter`, "\\d+\\.?\\d*")),

    # stem-height
    stem_height_min = ifelse(grepl(",", `stem-height`), as.numeric(str_extract(`stem-height`,
    stem_height_max = ifelse(grepl(",", `stem-height`), as.numeric(str_extract(`stem-height`,
    stem_height_mean = as.numeric(str_extract(`stem-height`, "\\d+\\.?\\d*")),

    # stem-width
    stem_width_min = ifelse(grepl(",", `stem-width`), as.numeric(str_extract(`stem-width`, "(?
    stem_width_max = ifelse(grepl(",", `stem-width`), as.numeric(str_extract(`stem-width`, "(?
    stem_width_mean = as.numeric(str_extract(`stem-width`, "\\d+\\.?\\d*")))

# Remove the original 'cap-diameter', 'stem-height', and 'stem-width' columns
dt <- dt %>% select(-c(`cap-diameter`, `stem-height`, `stem-width`))

# Check the structure of the updated dataset
str(dt)
```

```
tibble [173 × 29] (S3: tbl_df/tbl/data.frame)
 $ family              : chr [1:173] "Amanita Family" "Amanita Family" "Amanita Family"
"Amanita Family" ...
 $ name                : chr [1:173] "Fly Agaric" "Panther Cap" "False Panther Cap" "The
Blusher" ...
 $ class               : Factor w/ 2 levels "e","p": 2 2 2 1 2 1 2 1 1 1 ...
 $ cap-shape           : Factor w/ 27 levels "[b, f, s]","[b, f]",..: 23 18 23 23 23 27 5 8 16
27 ...
 $ Cap-surface         : Factor w/ 40 levels "[d, e, y, i]",..: 10 14 NA NA 20 NA 36 19 40 8
...
 $ cap-color           : Factor w/ 67 levels "[b, p, e, y]",..: 8 40 14 40 53 61 62 40 57 40
```

```
...
 $ does-bruise-or-bleed: Factor w/ 2 levels "[f]","[t]": 1 1 1 2 1 1 1 1 1 2 ...
 $ gill-attachment     : Factor w/ 8 levels "[a, d]","[a]",..: 4 4 4 NA NA 4 4 4 NA 4 ...
 $ gill-spacing        : Factor w/ 3 levels "[c]","[d]","[f]": NA NA NA NA 1 NA 1 NA NA NA ...
 $ gill-color          : Factor w/ 59 levels "[b, p, w]","[b, u]",..: 50 50 50 50 50 50 50 50
50 50 ...
 $ stem-root           : Factor w/ 5 levels "[b]","[c]","[f]",..: 5 NA NA 1 NA 1 NA NA 5 NA
...
 $ stem-surface        : Factor w/ 14 levels "[f]","[g]","[h]",..: 14 14 NA NA NA NA 14 11 NA
NA ...
 $ stem-color          : Factor w/ 41 levels "[b, u]","[e, n]",..: 37 37 37 37 37 36 37 33 23
37 ...
 $ veil-type           : Factor w/ 1 level "[u]": 1 1 1 1 1 1 1 1 NA NA ...
 $ veil-color          : Factor w/ 7 levels "[e, n]","[k]",..: 5 5 5 5 5 6 5 5 NA NA ...
 $ has-ring            : Factor w/ 2 levels "[f]","[t]": 2 2 2 2 2 2 2 1 2 2 ...
 $ ring-type           : Factor w/ 13 levels "[e, g]","[e]",..: 4 11 1 5 4 5 6 3 10 NA ...
 $ Spore-print-color   : Factor w/ 8 levels "[g]","[k, r]",..: NA NA NA NA NA NA NA NA NA NA
...
 $ habitat             : Factor w/ 21 levels "[d, h]","[d]",..: 2 2 2 2 2 2 2 2 17 4 ...
 $ season              : Factor w/ 10 levels "[a, w]","[a]",..: 8 9 9 9 9 9 9 9 9 9 ...
 $ cap_diameter_min    : num [1:173] 10 5 10 5 5 4 5 4 10 12 ...
 $ cap_diameter_max    : num [1:173] 20 10 15 15 12 9 10 8 25 18 ...
 $ cap_diameter_mean   : num [1:173] 10 5 10 5 5 4 5 4 10 12 ...
 $ stem_height_min     : num [1:173] 15 6 10 7 10 5 10 10 15 8 ...
 $ stem_height_max     : num [1:173] 20 10 12 15 12 7 15 15 35 12 ...
 $ stem_height_mean    : num [1:173] 15 6 10 7 10 5 10 10 15 8 ...
 $ stem_width_min      : num [1:173] 15 10 10 10 10 10 10 10 15 15 ...
 $ stem_width_max      : num [1:173] 20 20 20 25 20 15 15 15 25 20 ...
 $ stem_width_mean     : num [1:173] 15 10 10 10 10 10 10 10 15 15 ...
```

```r
head(dt)
```

```
# A tibble: 6 × 29
  family         name              class `cap-shape` `Cap-surface` `cap-color`
  <chr>          <chr>             <fct> <fct>       <fct>         <fct>
1 Amanita Family Fly Agaric        p     [x, f]      [g, h]        [e, o]
2 Amanita Family Panther Cap       p     [p, x]      [g]           [n]
3 Amanita Family False Panther Cap p     [x, f]      <NA>          [g, n]
4 Amanita Family The Blusher       e     [x, f]      <NA>          [n]
5 Amanita Family Death Cap         p     [x, f]      [h]           [r]
6 Amanita Family False Death Cap   e     [x]         <NA>          [w, y]
# ℹ 23 more variables: `does-bruise-or-bleed` <fct>, `gill-attachment` <fct>,
#   `gill-spacing` <fct>, `gill-color` <fct>, `stem-root` <fct>,
#   `stem-surface` <fct>, `stem-color` <fct>, `veil-type` <fct>,
#   `veil-color` <fct>, `has-ring` <fct>, `ring-type` <fct>,
#   `Spore-print-color` <fct>, habitat <fct>, season <fct>,
#   cap_diameter_min <dbl>, cap_diameter_max <dbl>, cap_diameter_mean <dbl>,
#   stem_height_min <dbl>, stem_height_max <dbl>, stem_height_mean <dbl>, …
```

Data Description:

In this dataset, 44.5% of edibile class of the mushroom species, while 55.5% of poisonous class of the mushroom species.

```
library(summarytools) ; library(Hmisc)
```

```
Warning: package 'summarytools' was built under R version 4.4.3

Warning: package 'Hmisc' was built under R version 4.4.2


Attaching package: 'Hmisc'

The following objects are masked from 'package:summarytools':

    label, label<-

The following objects are masked from 'package:dplyr':

    src, summarize

The following objects are masked from 'package:base':

    format.pval, units
```

```
describe(dt)
```

```
dt

 29  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
---------------------------------------------------------------------------
cap-shape
       n  missing distinct
     173        0       27

lowest : [b, f, s] [b, f]    [b, x, f] [b, x]    [b]
highest: [x, f]    [x, o]    [x, p]    [x, s]    [x]
---------------------------------------------------------------------------
Cap-surface
       n  missing distinct
     133       40       40

lowest : [d, e, y, i] [d, k, s]    [d, k]       [d, s]       [d]
highest: [t]          [w, t]       [w]          [y, s]       [y]
---------------------------------------------------------------------------
cap-color
       n  missing distinct
     173        0       67

lowest : [b, p, e, y]    [b, u]          [b]             [e, n, p, w]    [e, n, y]
highest: [y, n]          [y, o, g, n, r] [y, o, r, n]    [y, o]          [y]
---------------------------------------------------------------------------
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
---------------------------------------------------------------------------
gill-color
       n  missing distinct
     173        0       59

lowest : [b, p, w] [b, u]    [b]       [e]       [f]
highest: [y, o, e] [y, r, k] [y, r]    [y, w]    [y]
```

```
---------------------------------------------------------------------------
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]
Frequency       3      5      1      1      1      1     11      1      4
Proportion  0.046  0.077  0.015  0.015  0.015  0.015  0.169  0.015  0.062

Value      [s, h]    [s]    [t] [y, s]    [y]
Frequency       1     15      7      1     13
Proportion  0.015  0.231  0.108  0.015  0.200
---------------------------------------------------------------------------
stem-color
       n  missing distinct
     173        0       41

lowest : [b, u]    [e, n]    [e, u, y] [e, y]    [e]
highest: [w]       [y, e, n] [y, n]    [y, o, k] [y]
---------------------------------------------------------------------------
veil-type
       n  missing distinct    value
       9      164        1      [u]

Value      [u]
Frequency    9
Proportion   1
---------------------------------------------------------------------------
veil-color
       n  missing distinct
      21      152        7

Value      [e, n]    [k]    [n]    [u]    [w] [y, w]    [y]
Frequency       1      1      1      1     15      1      1
Proportion  0.048  0.048  0.048  0.048  0.714  0.048  0.048
---------------------------------------------------------------------------
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]
Frequency       1      6    137      2      2      1      1      2      2
Proportion  0.006  0.036  0.825  0.012  0.012  0.006  0.006  0.012  0.012

Value         [m]    [p]    [r]    [z]
Frequency       1      2      3      6
Proportion  0.006  0.012  0.018  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
---------------------------------------------------------------------------
habitat
       n  missing distinct
     173        0       21

lowest : [d, h]    [d]       [g, d, h] [g, d]    [g, h, d]
highest: [m, d]    [m, h]    [m]       [p, d]    [w]
---------------------------------------------------------------------------
season
       n  missing distinct
     173        0       10

Value            [a, w]          [a]    [s, a, w] [s, u, a, w]    [s, u, a]
Frequency            15           16            1           13            5
Proportion        0.087        0.092        0.006        0.075        0.029

Value            [s, u]          [s]    [u, a, w]       [u, a]          [u]
Frequency             3            1           12          106            1
Proportion        0.017        0.006        0.069        0.613        0.006
---------------------------------------------------------------------------
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_diameter_mean
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     173        0       14    0.976    4.043      3.5    3.038        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 0.098 0.225 0.139 0.150 0.168 0.064 0.023 0.052

Value       10.0  12.0  50.0
Frequency      4     2     1
Proportion 0.023 0.012 0.006

For the frequency table, variable is rounded to the nearest 0
--------------------------------------------------------------------------------
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_height_mean
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     173        0       12    0.957    4.306        4    2.233      2.0
     .10      .25      .50      .75      .90      .95
     2.0      3.0      4.0      5.0      6.8      8.0

Value          0     1     2     3     4     5     6     7     8    10    12
Frequency      3     2    21    38    52    24    15     3     7     5     1
Proportion 0.017 0.012 0.121 0.220 0.301 0.139 0.087 0.017 0.040 0.029 0.006

Value         15
Frequency      2
Proportion 0.012

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_width_mean
```

```
        n  missing distinct     Info     Mean  pMedian      Gmd      .05
      173        0       16     0.98    8.529        8    6.804        1
      .10      .25      .50      .75      .90      .95
        2        4        8       10       19       20

Value        0.0   0.5   1.0   2.0   3.0   4.0   5.0   6.0   7.0   8.0  10.0
Frequency      3     1     9    18    12    12    19     7     1    10    42
Proportion 0.017 0.006 0.052 0.104 0.069 0.069 0.110 0.040 0.006 0.058 0.243

Value       12.0  15.0  20.0  30.0  40.0
Frequency      1    20    16     1     1
Proportion 0.006 0.116 0.092 0.006 0.006

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

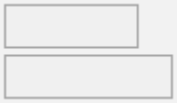
```
dfSummary(dt, graph.col = TRUE) %>% print(method = "render")
```

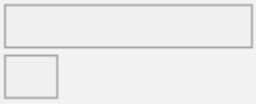
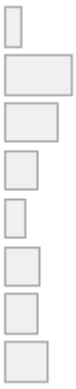
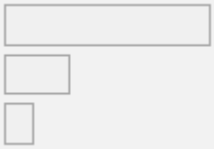
Data Frame Summary

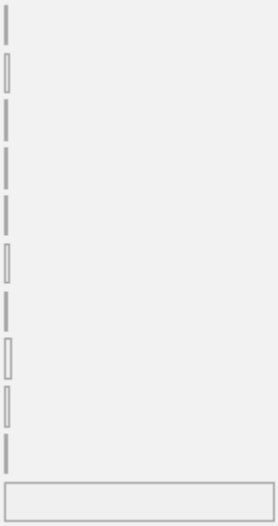
dt

Dimensions: 173 x 29
Duplicates: 0

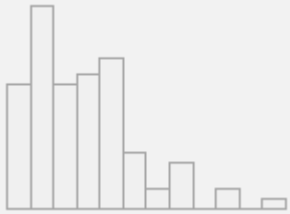
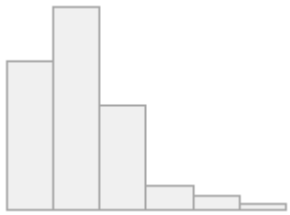
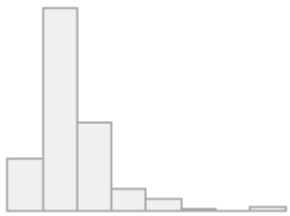
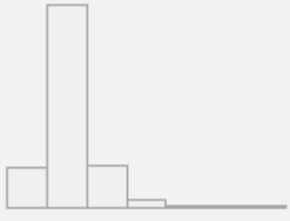
No	Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
1	family [character]	1. Tricholoma Family 2. Russula Family 3. Bolete Family 4. Ink Cap Family 5. Cortinarius Family 6. Amanita Family 7. Stropharia Family 8. Wax Gill Family 9. Bracket Fungi 10. Entoloma Family [13 others]	43 (24.9%) 27 (15.6%) 14 (8.1%) 13 (7.5%) 11 (6.4%) 8 (4.6%) 8 (4.6%) 8 (4.6%) 7 (4.0%) 7 (4.0%) 27 (15.6%)		173 (100.0%)	0 (0.0%)

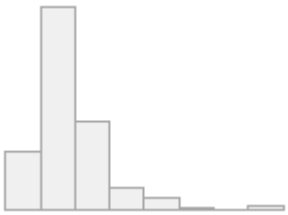
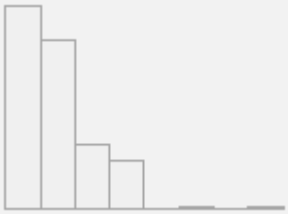
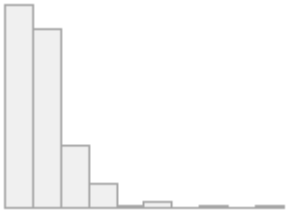
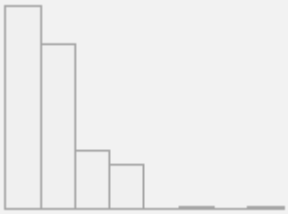
No	Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
2	name [character]	1. Amethyst Deceiver 2. Aniseed Funnel Cap 3. Apricot Fungus 4. Bare-toothed Russula 5. Bay Bolete 6. Beechwood Sickener 7. Birch Russula 8. Bitter Bolete 9. Blackening Russula 10. Blackening Wax Cap [163 others]	1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 163 (94.2%)		173 (100.0%)	0 (0.0%)
3	class [factor]	1. e 2. p	77 (44.5%) 96 (55.5%)		173 (100.0%)	0 (0.0%)
4	cap-shape [factor]	1. [b, f, s] 2. [b, f] 3. [b, x, f] 4. [b, x] 5. [b] 6. [c, f] 7. [c, x, f] 8. [c, x] 9. [c] 10. [f, s] [17 others]	1 (0.6%) 5 (2.9%) 1 (0.6%) 3 (1.7%) 10 (5.8%) 2 (1.2%) 1 (0.6%) 1 (0.6%) 3 (1.7%) 8 (4.6%) 138 (79.8%)		173 (100.0%)	0 (0.0%)

No	Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
5	Cap-surface [factor]	1. [d, e, y, i] 2. [d, k, s] 3. [d, k] 4. [d, s] 5. [d] 6. [e, k, s, h] 7. [e, t, k] 8. [e, y] 9. [e] 10. [g, h] [30 others]	1 (0.8%) 1 (0.8%) 2 (1.5%) 1 (0.8%) 9 (6.8%) 1 (0.8%) 1 (0.8%) 1 (0.8%) 5 (3.8%) 1 (0.8%) 110 (82.7%)		133 (76.9%)	40 (23.1%)
6	cap-color [factor]	1. [b, p, e, y] 2. [b, u] 3. [b] 4. [e, n, p, w] 5. [e, n, y] 6. [e, n] 7. [e, o, k] 8. [e, o] 9. [e, p, w] 10. [e, u, y] [57 others]	1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 2 (1.2%) 2 (1.2%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 161 (93.1%)		173 (100.0%)	0 (0.0%)
7	does-bruise-or-bleed [factor]	1. [f] 2. [t]	143 (82.7%) 30 (17.3%)		173 (100.0%)	0 (0.0%)
8	gill-attachment [factor]	1. [a, d] 2. [a] 3. [d] 4. [e] 5. [f] 6. [p] 7. [s] 8. [x]	8 (5.5%) 32 (22.1%) 25 (17.2%) 16 (11.0%) 10 (6.9%) 17 (11.7%) 16 (11.0%) 21 (14.5%)		145 (83.8%)	28 (16.2%)
9	gill-spacing [factor]	1. [c] 2. [d] 3. [f]	70 (68.6%) 22 (21.6%) 10 (9.8%)		102 (59.0%)	71 (41.0%)

No	Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
10	gill-color [factor]	1. [b, p, w] 2. [b, u] 3. [b] 4. [e] 5. [f] 6. [g, k] 7. [g, n, u] 8. [g, n] 9. [g, p] 10. [g, r, w] [49 others]	1 (0.6%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 10 (5.8%) 2 (1.2%) 1 (0.6%) 3 (1.7%) 1 (0.6%) 1 (0.6%) 151 (87.3%)		173 (100.0%)	0 (0.0%)
11	stem-root [factor]	1. [b] 2. [c] 3. [f] 4. [r] 5. [s]	9 (33.3%) 2 (7.4%) 3 (11.1%) 4 (14.8%) 9 (33.3%)		27 (15.6%)	146 (84.4%)
12	stem-surface [factor]	1. [f] 2. [g] 3. [h] 4. [i, s] 5. [i, t] 6. [i, y] 7. [i] 8. [k, s] 9. [k] 10. [s, h] [4 others]	3 (4.6%) 5 (7.7%) 1 (1.5%) 1 (1.5%) 1 (1.5%) 1 (1.5%) 11 (16.9%) 1 (1.5%) 4 (6.2%) 1 (1.5%) 36 (55.4%)		65 (37.6%)	108 (62.4%)
13	stem-color [factor]	1. [b, u] 2. [e, n] 3. [e, u, y] 4. [e, y] 5. [e] 6. [f] 7. [g, w] 8. [g, n] 9. [g, r, n] 10. [g, u, n] [31 others]	1 (0.6%) 3 (1.7%) 1 (0.6%) 1 (0.6%) 1 (0.6%) 3 (1.7%) 1 (0.6%) 4 (2.3%) 2 (1.2%) 1 (0.6%) 155 (89.6%)		173 (100.0%)	0 (0.0%)
14	veil-type [factor]	1. [u]	9 (100.0%)		9 (5.2%)	164 (94.8%)

No	Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
15	veil-color [factor]	1. [e, n] 2. [k] 3. [n] 4. [u] 5. [w] 6. [y, w] 7. [y]	1 (4.8%) 1 (4.8%) 1 (4.8%) 1 (4.8%) 15 (71.4%) 1 (4.8%) 1 (4.8%)		21 (12.1%)	152 (87.9%)
16	has-ring [factor]	1. [f] 2. [t]	130 (75.1%) 43 (24.9%)		173 (100.0%)	0 (0.0%)
17	ring-type [factor]	1. [e, g] 2. [e] 3. [f] 4. [g, p] 5. [g] 6. [l, e] 7. [l, p] 8. [l, r] 9. [l] 10. [m] [3 others]	1 (0.6%) 6 (3.6%) 137 (82.5%) 2 (1.2%) 2 (1.2%) 1 (0.6%) 1 (0.6%) 2 (1.2%) 2 (1.2%) 1 (0.6%) 11 (6.6%)		166 (96.0%)	7 (4.0%)
18	Spore-print-color [factor]	1. [g] 2. [k, r] 3. [k, u] 4. [k] 5. [n] 6. [p, w] 7. [p] 8. [w]	1 (5.6%) 1 (5.6%) 1 (5.6%) 5 (27.8%) 3 (16.7%) 1 (5.6%) 3 (16.7%) 3 (16.7%)		18 (10.4%)	155 (89.6%)
19	habitat [factor]	1. [d, h] 2. [d] 3. [g, d, h] 4. [g, d] 5. [g, h, d] 6. [g, l, d] 7. [g, l, m, d] 8. [g, m, d] 9. [g, m] 10. [g, u, d] [11 others]	4 (2.3%) 104 (60.1%) 1 (0.6%) 10 (5.8%) 3 (1.7%) 1 (0.6%) 1 (0.6%) 5 (2.9%) 5 (2.9%) 1 (0.6%) 38 (22.0%)		173 (100.0%)	0 (0.0%)

No	Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
20	season [factor]	1. [a, w] 2. [a] 3. [s, a, w] 4. [s, u, a, w] 5. [s, u, a] 6. [s, u] 7. [s] 8. [u, a, w] 9. [u, a] 10. [u]	15 (8.7%) 16 (9.2%) 1 (0.6%) 13 (7.5%) 5 (2.9%) 3 (1.7%) 1 (0.6%) 12 (6.9%) 106 (61.3%) 1 (0.6%)		173 (100.0%)	0 (0.0%)
21	cap_diameter_min [numeric]	Mean (sd) : 3.8 (2.3) min ≤ med ≤ max: 0.4 ≤ 3 ≤ 12 IQR (CV) : 3 (0.6)	13 distinct values		172 (99.4%)	1 (0.6%)
22	cap_diameter_max [numeric]	Mean (sd) : 9.2 (5.7) min ≤ med ≤ max: 1 ≤ 8 ≤ 30 IQR (CV) : 7 (0.6)	19 distinct values		172 (99.4%)	1 (0.6%)
23	cap_diameter_mean [numeric]	Mean (sd) : 4 (4.2) min ≤ med ≤ max: 0.4 ≤ 3 ≤ 50 IQR (CV) : 3 (1)	14 distinct values		173 (100.0%)	0 (0.0%)
24	stem_height_min [numeric]	Mean (sd) : 4.4 (2.2) min ≤ med ≤ max: 1 ≤ 4 ≤ 15 IQR (CV) : 2 (0.5)	11 distinct values		170 (98.3%)	3 (1.7%)
25	stem_height_max [numeric]	Mean (sd) : 9 (4.4) min ≤ med ≤ max: 2 ≤ 8 ≤ 35 IQR (CV) : 4 (0.5)	18 distinct values		170 (98.3%)	3 (1.7%)

No	Variable	Stats / Values	Freqs (% of Valid)	Graph	Valid	Missing
26	stem_height_mean [numeric]	Mean (sd) : 4.3 (2.3) min ≤ med ≤ max: 0 ≤ 4 ≤ 15 IQR (CV) : 2 (0.5)	12 distinct values		173 (100.0%)	0 (0.0%)
27	stem_width_min [numeric]	Mean (sd) : 8.8 (6.4) min ≤ med ≤ max: 0.5 ≤ 8 ≤ 40 IQR (CV) : 6 (0.7)	15 distinct values		162 (93.6%)	11 (6.4%)
28	stem_width_max [numeric]	Mean (sd) : 16.6 (13.9) min ≤ med ≤ max: 1 ≤ 15 ≤ 100 IQR (CV) : 12 (0.8)	20 distinct values		162 (93.6%)	11 (6.4%)
29	stem_width_mean [numeric]	Mean (sd) : 8.5 (6.4) min ≤ med ≤ max: 0 ≤ 8 ≤ 40 IQR (CV) : 6 (0.7)	16 distinct values		173 (100.0%)	0 (0.0%)

Generated by summarytools 1.1.2 (R version 4.4.0)
2025-03-20

Table 1:

```
library(table1)
```

```
Warning: package 'table1' was built under R version 4.4.3
```

```

Attaching package: 'table1'
```

```
The following objects are masked from 'package:Hmisc':

    label, label<-, units
```

```
The following objects are masked from 'package:summarytools':
```

```
    label, label<-
The following objects are masked from 'package:base':

    units, units<-
```

```
table1(~ cap_diameter_min+cap_diameter_max+cap_diameter_mean+`cap-shape`+`Cap-surface`+`cap-co
```

	e (N=77)	p (N=96)	Overall (N=173)
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)	4.75 (5.74)	3.47 (2.27)	4.04 (4.22)
Median [Min, Max]	4.00 [0.500, 50.0]	3.00 [0.400, 10.0]	3.00 [0.400, 50.0]
cap-shape			
[b, f, s]	0 (0%)	1 (1.0%)	1 (0.6%)
[b, f]	2 (2.6%)	3 (3.1%)	5 (2.9%)
[b, x, f]	0 (0%)	1 (1.0%)	1 (0.6%)
[b, x]	0 (0%)	3 (3.1%)	3 (1.7%)
[b]	2 (2.6%)	8 (8.3%)	10 (5.8%)
[c, f]	0 (0%)	2 (2.1%)	2 (1.2%)
[c, x, f]	1 (1.3%)	0 (0%)	1 (0.6%)
[c, x]	1 (1.3%)	0 (0%)	1 (0.6%)
[c]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[f, s]	3 (3.9%)	5 (5.2%)	8 (4.6%)
[f, x]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[f]	4 (5.2%)	4 (4.2%)	8 (4.6%)
[o]	1 (1.3%)	7 (7.3%)	8 (4.6%)
[p, b]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[p, c, o]	1 (1.3%)	0 (0%)	1 (0.6%)
[p, f]	2 (2.6%)	0 (0%)	2 (1.2%)
[p, x, f]	2 (2.6%)	0 (0%)	2 (1.2%)
[p, x]	3 (3.9%)	1 (1.0%)	4 (2.3%)

	e (N=77)	p (N=96)	Overall (N=173)
[p]	0 (0%)	1 (1.0%)	1 (0.6%)
[s, o]	2 (2.6%)	0 (0%)	2 (1.2%)
[s]	4 (5.2%)	5 (5.2%)	9 (5.2%)
[x, f, s]	7 (9.1%)	6 (6.3%)	13 (7.5%)
[x, f]	14 (18.2%)	15 (15.6%)	29 (16.8%)
[x, o]	0 (0%)	1 (1.0%)	1 (0.6%)
[x, p]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[x, s]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[x]	23 (29.9%)	25 (26.0%)	48 (27.7%)
Cap-surface			
[d, e, y, i]	0 (0%)	1 (1.0%)	1 (0.6%)
[d, k, s]	0 (0%)	1 (1.0%)	1 (0.6%)
[d, k]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[d, s]	1 (1.3%)	0 (0%)	1 (0.6%)
[d]	4 (5.2%)	5 (5.2%)	9 (5.2%)
[e, k, s, h]	0 (0%)	1 (1.0%)	1 (0.6%)
[e, t, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[e, y]	1 (1.3%)	0 (0%)	1 (0.6%)
[e]	3 (3.9%)	2 (2.1%)	5 (2.9%)
[g, h]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, s, d]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, s, h, t]	1 (1.3%)	0 (0%)	1 (0.6%)
[g, s, t]	1 (1.3%)	0 (0%)	1 (0.6%)
[g]	5 (6.5%)	7 (7.3%)	12 (6.9%)
[h, s, d]	1 (1.3%)	0 (0%)	1 (0.6%)
[h, s, t]	0 (0%)	1 (1.0%)	1 (0.6%)
[h, t, w]	0 (0%)	1 (1.0%)	1 (0.6%)
[h, t, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[h, t]	6 (7.8%)	4 (4.2%)	10 (5.8%)
[h]	3 (3.9%)	2 (2.1%)	5 (2.9%)
[i, e]	0 (0%)	1 (1.0%)	1 (0.6%)
[i, y]	2 (2.6%)	0 (0%)	2 (1.2%)
[i]	0 (0%)	4 (4.2%)	4 (2.3%)
[k, e]	0 (0%)	1 (1.0%)	1 (0.6%)
[k]	0 (0%)	4 (4.2%)	4 (2.3%)
[l]	2 (2.6%)	2 (2.1%)	4 (2.3%)
[s, d]	1 (1.3%)	0 (0%)	1 (0.6%)

	e (N=77)	p (N=96)	Overall (N=173)
[s, h]	0 (0%)	1 (1.0%)	1 (0.6%)
[s, i]	0 (0%)	1 (1.0%)	1 (0.6%)
[s, t]	2 (2.6%)	2 (2.1%)	4 (2.3%)
[s, y]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[s]	8 (10.4%)	5 (5.2%)	13 (7.5%)
[t, h, s]	1 (1.3%)	0 (0%)	1 (0.6%)
[t, h]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[t, w, d]	0 (0%)	1 (1.0%)	1 (0.6%)
[t]	2 (2.6%)	10 (10.4%)	12 (6.9%)
[w, t]	1 (1.3%)	0 (0%)	1 (0.6%)
[w]	2 (2.6%)	3 (3.1%)	5 (2.9%)
[y, s]	1 (1.3%)	0 (0%)	1 (0.6%)
[y]	7 (9.1%)	7 (7.3%)	14 (8.1%)
Missing	19 (24.7%)	21 (21.9%)	40 (23.1%)
cap-color			
[b, p, e, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[b, u]	1 (1.3%)	0 (0%)	1 (0.6%)
[b]	1 (1.3%)	0 (0%)	1 (0.6%)
[e, n, p, w]	0 (0%)	1 (1.0%)	1 (0.6%)
[e, n, y]	2 (2.6%)	0 (0%)	2 (1.2%)
[e, n]	0 (0%)	2 (2.1%)	2 (1.2%)
[e, o, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[e, o]	0 (0%)	1 (1.0%)	1 (0.6%)
[e, p, w]	0 (0%)	1 (1.0%)	1 (0.6%)
[e, u, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[e]	0 (0%)	3 (3.1%)	3 (1.7%)
[g, k]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[g, n, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, n]	6 (7.8%)	4 (4.2%)	10 (5.8%)
[g, r, k, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, r, n]	0 (0%)	2 (2.1%)	2 (1.2%)
[g, u, n, p]	1 (1.3%)	0 (0%)	1 (0.6%)
[g, u, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[g]	0 (0%)	1 (1.0%)	1 (0.6%)
[k, n, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[l, g, b, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[l, k]	0 (0%)	1 (1.0%)	1 (0.6%)

	e (N=77)	p (N=96)	Overall (N=173)
[l, r, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[l, u, g, n]	1 (1.3%)	0 (0%)	1 (0.6%)
[l, y]	1 (1.3%)	0 (0%)	1 (0.6%)
[n ,w]	1 (1.3%)	0 (0%)	1 (0.6%)
[n, b]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[n, e, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[n, e]	1 (1.3%)	4 (4.2%)	5 (2.9%)
[n, g]	3 (3.9%)	0 (0%)	3 (1.7%)
[n, o, e]	1 (1.3%)	0 (0%)	1 (0.6%)
[n, o, y, w]	0 (0%)	1 (1.0%)	1 (0.6%)
[n, o]	2 (2.6%)	2 (2.1%)	4 (2.3%)
[n, p, e]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[n, r, u, y]	1 (1.3%)	0 (0%)	1 (0.6%)
[n, w]	1 (1.3%)	3 (3.1%)	4 (2.3%)
[n, y, e]	1 (1.3%)	0 (0%)	1 (0.6%)
[n, y, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[n, y]	3 (3.9%)	6 (6.3%)	9 (5.2%)
[n]	22 (28.6%)	16 (16.7%)	38 (22.0%)
[o, b]	1 (1.3%)	0 (0%)	1 (0.6%)
[o, e, n, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[o, n]	1 (1.3%)	0 (0%)	1 (0.6%)
[o, p, e]	1 (1.3%)	0 (0%)	1 (0.6%)
[o, y, r]	0 (0%)	1 (1.0%)	1 (0.6%)
[o, y]	0 (0%)	3 (3.1%)	3 (1.7%)
[o]	0 (0%)	2 (2.1%)	2 (1.2%)
[p]	0 (0%)	2 (2.1%)	2 (1.2%)
[r, l]	0 (0%)	1 (1.0%)	1 (0.6%)
[r, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[r, p, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[r, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[r]	0 (0%)	1 (1.0%)	1 (0.6%)
[u, k]	1 (1.3%)	0 (0%)	1 (0.6%)
[u]	0 (0%)	2 (2.1%)	2 (1.2%)
[w, g]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[w, n]	2 (2.6%)	2 (2.1%)	4 (2.3%)
[w, p, o]	1 (1.3%)	0 (0%)	1 (0.6%)
[w, u]	0 (0%)	1 (1.0%)	1 (0.6%)

	e (N=77)	p (N=96)	Overall (N=173)
[w, y, g, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, y]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[w]	6 (7.8%)	6 (6.3%)	12 (6.9%)
[y, n]	0 (0%)	3 (3.1%)	3 (1.7%)
[y, o, g, n, r]	0 (0%)	1 (1.0%)	1 (0.6%)
[y, o, r, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[y, o]	0 (0%)	1 (1.0%)	1 (0.6%)
[y]	6 (7.8%)	4 (4.2%)	10 (5.8%)
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%)
[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%)
gill-color			
[b, p, w]	0 (0%)	1 (1.0%)	1 (0.6%)
[b, u]	1 (1.3%)	0 (0%)	1 (0.6%)
[b]	1 (1.3%)	0 (0%)	1 (0.6%)
[e]	0 (0%)	1 (1.0%)	1 (0.6%)
[f]	4 (5.2%)	6 (6.3%)	10 (5.8%)
[g, k]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[g, n, u]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, n]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[g, p]	1 (1.3%)	0 (0%)	1 (0.6%)
[g, r, w]	0 (0%)	1 (1.0%)	1 (0.6%)

	e (N=77)	p (N=96)	Overall (N=173)
[g, u]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, w, y]	1 (1.3%)	0 (0%)	1 (0.6%)
[g, w]	2 (2.6%)	0 (0%)	2 (1.2%)
[g]	3 (3.9%)	1 (1.0%)	4 (2.3%)
[k, n]	2 (2.6%)	4 (4.2%)	6 (3.5%)
[k, p, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[k, p]	0 (0%)	1 (1.0%)	1 (0.6%)
[n, e, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[n, p]	0 (0%)	2 (2.1%)	2 (1.2%)
[n, r]	0 (0%)	1 (1.0%)	1 (0.6%)
[n, u]	0 (0%)	1 (1.0%)	1 (0.6%)
[n, w]	0 (0%)	2 (2.1%)	2 (1.2%)
[n, y]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[n]	3 (3.9%)	8 (8.3%)	11 (6.4%)
[o, b]	1 (1.3%)	0 (0%)	1 (0.6%)
[o, e]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[o, y]	1 (1.3%)	4 (4.2%)	5 (2.9%)
[o]	2 (2.6%)	2 (2.1%)	4 (2.3%)
[p, n, k]	1 (1.3%)	0 (0%)	1 (0.6%)
[p, n]	1 (1.3%)	0 (0%)	1 (0.6%)
[p, w]	3 (3.9%)	2 (2.1%)	5 (2.9%)
[p, y, r]	0 (0%)	1 (1.0%)	1 (0.6%)
[p, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[p]	3 (3.9%)	5 (5.2%)	8 (4.6%)
[r, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[r]	1 (1.3%)	0 (0%)	1 (0.6%)
[u, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[w, b, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, g, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, g, p, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, g, u]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, g]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, n]	3 (3.9%)	2 (2.1%)	5 (2.9%)
[w, p, y]	1 (1.3%)	0 (0%)	1 (0.6%)
[w, p]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[w, r]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, u, g, n]	1 (1.3%)	0 (0%)	1 (0.6%)

	e (N=77)	p (N=96)	Overall (N=173)
[w, y, g, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, y]	3 (3.9%)	2 (2.1%)	5 (2.9%)
[w]	21 (27.3%)	15 (15.6%)	36 (20.8%)
[y, e, n]	1 (1.3%)	0 (0%)	1 (0.6%)
[y, g, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[y, k]	1 (1.3%)	0 (0%)	1 (0.6%)
[y, n]	1 (1.3%)	4 (4.2%)	5 (2.9%)
[y, o, e]	0 (0%)	1 (1.0%)	1 (0.6%)
[y, r, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[y, r]	1 (1.3%)	0 (0%)	1 (0.6%)
[y, w]	0 (0%)	1 (1.0%)	1 (0.6%)
[y]	6 (7.8%)	7 (7.3%)	13 (7.5%)
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)	4.52 (2.20)	4.14 (2.31)	4.31 (2.26)
Median [Min, Max]	4.00 [2.00, 15.0]	4.00 [0, 15.0]	4.00 [0, 15.0]
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)	10.1 (6.80)	7.26 (5.71)	8.53 (6.36)
Median [Min, Max]	10.0 [1.00, 40.0]	5.00 [0, 20.0]	8.00 [0, 40.0]
stem-root			
[b]	6 (7.8%)	3 (3.1%)	9 (5.2%)
[c]	0 (0%)	2 (2.1%)	2 (1.2%)

	e (N=77)	p (N=96)	Overall (N=173)
[f]	0 (0%)	3 (3.1%)	3 (1.7%)
[r]	0 (0%)	4 (4.2%)	4 (2.3%)
[s]	4 (5.2%)	5 (5.2%)	9 (5.2%)
Missing	67 (87.0%)	79 (82.3%)	146 (84.4%)
stem-surface			
[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, t]	1 (1.3%)	0 (0%)	1 (0.6%)
[i, y]	0 (0%)	1 (1.0%)	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, h]	0 (0%)	1 (1.0%)	1 (0.6%)
[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%)
Missing	53 (68.8%)	55 (57.3%)	108 (62.4%)
stem-color			
[b, u]	1 (1.3%)	0 (0%)	1 (0.6%)
[e, n]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[e, u, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[e, y]	1 (1.3%)	0 (0%)	1 (0.6%)
[e]	0 (0%)	1 (1.0%)	1 (0.6%)
[f]	0 (0%)	3 (3.1%)	3 (1.7%)
[g, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[g, n]	1 (1.3%)	3 (3.1%)	4 (2.3%)
[g, r, n]	0 (0%)	2 (2.1%)	2 (1.2%)
[g, u, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, w]	2 (2.6%)	0 (0%)	2 (1.2%)
[g]	2 (2.6%)	0 (0%)	2 (1.2%)
[k, n]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[k]	0 (0%)	1 (1.0%)	1 (0.6%)
[l, r, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[n, e]	0 (0%)	2 (2.1%)	2 (1.2%)

	e (N=77)	p (N=96)	Overall (N=173)
[n, g]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[n, o]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[n, p, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[n, p]	0 (0%)	1 (1.0%)	1 (0.6%)
[n, w]	2 (2.6%)	1 (1.0%)	3 (1.7%)
[n, y]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[n]	15 (19.5%)	20 (20.8%)	35 (20.2%)
[o, e]	1 (1.3%)	0 (0%)	1 (0.6%)
[o, n]	1 (1.3%)	0 (0%)	1 (0.6%)
[o, y]	1 (1.3%)	4 (4.2%)	5 (2.9%)
[o]	0 (0%)	1 (1.0%)	1 (0.6%)
[p]	0 (0%)	2 (2.1%)	2 (1.2%)
[r, y]	0 (0%)	1 (1.0%)	1 (0.6%)
[u, e]	0 (0%)	1 (1.0%)	1 (0.6%)
[u]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[w, l, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, n]	2 (2.6%)	1 (1.0%)	3 (1.7%)
[w, o]	1 (1.3%)	0 (0%)	1 (0.6%)
[w, u]	0 (0%)	1 (1.0%)	1 (0.6%)
[w, y]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[w]	32 (41.6%)	25 (26.0%)	57 (32.9%)
[y, e, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[y, n]	0 (0%)	4 (4.2%)	4 (2.3%)
[y, o, k]	0 (0%)	1 (1.0%)	1 (0.6%)
[y]	5 (6.5%)	8 (8.3%)	13 (7.5%)
veil-type			
[u]	3 (3.9%)	6 (6.3%)	9 (5.2%)
Missing	74 (96.1%)	90 (93.8%)	164 (94.8%)
veil-color			
[e, n]	0 (0%)	1 (1.0%)	1 (0.6%)
[k]	0 (0%)	1 (1.0%)	1 (0.6%)
[n]	0 (0%)	1 (1.0%)	1 (0.6%)
[u]	0 (0%)	1 (1.0%)	1 (0.6%)
[w]	7 (9.1%)	8 (8.3%)	15 (8.7%)
[y, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[y]	1 (1.3%)	0 (0%)	1 (0.6%)
Missing	68 (88.3%)	84 (87.5%)	152 (87.9%)

	e (N=77)	p (N=96)	Overall (N=173)
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, g]	0 (0%)	1 (1.0%)	1 (0.6%)
[e]	3 (3.9%)	3 (3.1%)	6 (3.5%)
[f]	61 (79.2%)	76 (79.2%)	137 (79.2%)
[g, p]	0 (0%)	2 (2.1%)	2 (1.2%)
[g]	2 (2.6%)	0 (0%)	2 (1.2%)
[l, e]	0 (0%)	1 (1.0%)	1 (0.6%)
[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%)
[z]	0 (0%)	6 (6.3%)	6 (3.5%)
Missing	4 (5.2%)	3 (3.1%)	7 (4.0%)
Spore-print-color			
[g]	1 (1.3%)	0 (0%)	1 (0.6%)
[k, r]	0 (0%)	1 (1.0%)	1 (0.6%)
[k, u]	0 (0%)	1 (1.0%)	1 (0.6%)
[k]	1 (1.3%)	4 (4.2%)	5 (2.9%)
[n]	0 (0%)	3 (3.1%)	3 (1.7%)
[p, w]	0 (0%)	1 (1.0%)	1 (0.6%)
[p]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[w]	2 (2.6%)	1 (1.0%)	3 (1.7%)
Missing	72 (93.5%)	83 (86.5%)	155 (89.6%)
habitat			
[d, h]	1 (1.3%)	3 (3.1%)	4 (2.3%)
[d]	47 (61.0%)	57 (59.4%)	104 (60.1%)
[g, d, h]	1 (1.3%)	0 (0%)	1 (0.6%)
[g, d]	6 (7.8%)	4 (4.2%)	10 (5.8%)
[g, h, d]	1 (1.3%)	2 (2.1%)	3 (1.7%)
[g, l, d]	0 (0%)	1 (1.0%)	1 (0.6%)
[g, l, m, d]	1 (1.3%)	0 (0%)	1 (0.6%)
[g, m, d]	1 (1.3%)	4 (4.2%)	5 (2.9%)

	e (N=77)	p (N=96)	Overall (N=173)
[g, m]	3 (3.9%)	2 (2.1%)	5 (2.9%)
[g, u, d]	1 (1.3%)	0 (0%)	1 (0.6%)
[g]	1 (1.3%)	10 (10.4%)	11 (6.4%)
[h, d]	0 (0%)	2 (2.1%)	2 (1.2%)
[l, d, h]	1 (1.3%)	0 (0%)	1 (0.6%)
[l, d]	7 (9.1%)	6 (6.3%)	13 (7.5%)
[l, h]	1 (1.3%)	0 (0%)	1 (0.6%)
[l]	1 (1.3%)	0 (0%)	1 (0.6%)
[m, d]	2 (2.6%)	1 (1.0%)	3 (1.7%)
[m, h]	0 (0%)	1 (1.0%)	1 (0.6%)
[m]	1 (1.3%)	1 (1.0%)	2 (1.2%)
[p, d]	0 (0%)	2 (2.1%)	2 (1.2%)
[w]	1 (1.3%)	0 (0%)	1 (0.6%)
season			
[a, w]	9 (11.7%)	6 (6.3%)	15 (8.7%)
[a]	5 (6.5%)	11 (11.5%)	16 (9.2%)
[s, a, w]	1 (1.3%)	0 (0%)	1 (0.6%)
[s, u, a, w]	7 (9.1%)	6 (6.3%)	13 (7.5%)
[s, u, a]	1 (1.3%)	4 (4.2%)	5 (2.9%)
[s, u]	2 (2.6%)	1 (1.0%)	3 (1.7%)
[s]	1 (1.3%)	0 (0%)	1 (0.6%)
[u, a, w]	8 (10.4%)	4 (4.2%)	12 (6.9%)
[u, a]	43 (55.8%)	63 (65.6%)	106 (61.3%)
[u]	0 (0%)	1 (1.0%)	1 (0.6%)