統計諮詢 HW2

R26131060

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2025-03-17

目錄

一、變數介紹

Variable	Data Type	Definition	Note
family	character	Name of the mushroom family.	
name	character	Type of the mushroom species.	
class	factor (binary)	Indicates if the mushroom is poisonous or edible.	poisonous / edible
cap-diameter	numerical	Diameter of the mushroom cap.	two values=min max, one value=mean
cap-shape	factor	Shape of the mushroom cap.	bell=b, conical=c, convex=x, flat=f, sunken=s, spherical=p, others=o
cap-surface	factor	Surface of the mushroom cap.	fibrous=f, grooves=g, scaly=y, smooth=s
cap-color	factor	Color of the mushroom 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-or-bleed	factor	Indicates if the mushroom bruises/bleeds.	bruises or bleeding=t, none=f
gill-attachment	factor	Attachment of gills to the stem.	adnate=a, adnexed=x, decurrent=d, free=e
gill-spacing	factor	Spacing of the gills.	close=c, distant=d, none=f
gill-color	factor	Color of the gills.	See cap-color + none=f
stem-height	numerical	Height of the mushroom stem.	two values=min max, one value=mean
stem-width	numerical	Width of the mushroom stem.	two values=min max, one value=mean

Variable	Data Type	Definition	Note
stem-root	factor	Type of root.	bulbous=b, swollen=s, club=c, cup=u, equal=e, rhizomorphs=z, rooted=r
stem-surface	factor	Surface texture of the stem.	See cap-surface + none=f
stem-color	factor	Color of the stem.	See cap-color + none=f
veil-type	factor	Type of veil.	partial=p, universal=u
veil-color	factor	Color of the veil.	See cap-color + none=f
has-ring	factor	Indicates whether the mushroom has a ring (yes/ no).	ring=t, none=f
ring-type	factor	Type of ring.	cobwebby=c, evanescent=e, flaring=f, grooved=g, large=l, pendant=p, sheathing=s, zone=z, scaly=y, movable=m, none=f, unknown=?
spore-print-color	factor	Color of the spore print.	See cap color
habitat	factor	Habitat where the mushroom grows.	grasses=g, leaves=l, meadows=m, paths=p, heaths=h, urban=u, waste=w, woods=d
season	factor	Season when the mushroom grows.	spring=s, summer=u, autumn=a, winter=w

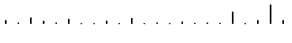
二、敘述統計

```
library(reticulate)
library(tidyverse)
library(magrittr)

mushroom <- read.csv("C:/Users/USER/Desktop/   / /  / /mushroom/primary_data.csv", sep = ";")


#  [min, max]  min & max

numeric_columns <- c("cap.diameter", "stem.height", "stem.width")

split_data <- function(value) {
  numbers <- unlist(strsplit(value, ","))
  numbers <- trimws(numbers)
  if (length(numbers) == 2) {
    return(c(numbers[1], numbers[2]))
  } else {
    return(c(numbers[1], NA))
  }
}

for (col in numeric_columns) {
  new_cols <- do.call(rbind, lapply(mushroom[[col]], split_data))
  colnames(new_cols) <- c(paste0(col, "_min"), paste0(col, "_max"))
  mushroom <- cbind(mushroom, new_cols)
}

mushroom <- mushroom %>% select(-all_of(numeric_columns))


#
mushroom[c(1:20)] <- lapply(mushroom[c(1:20)], function(x) {
as.factor(gsub("\\[|\\]", "", as.character(x)))})

mushroom[c(21:26)] <- lapply(mushroom[c(21:26)], function(x) {
as.numeric(gsub("\\[|\\]", "", as.character(x)))})
```

```
library(Hmisc)
latex(describe(mushroom),file="")
```

mushroom
26 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

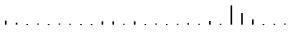
```
lowest : Amethyst Deceiver        Aniseed Funnel Cap       Apricot Fungus           Bare-toothed Russula     Bay Bolete
highest: Yellow-gilled Russula    Yellow-staining Mushroom Yellow-stemmed Bell Cap  Yellow Swamp Russula     Yellow Wax cap
```

class

n	missing	distinct
173	0	2

Value	e	p
Frequency	77	96
Proportion	0.445	0.555

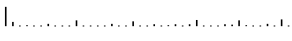
cap.shape



n	missing	distinct
173	0	27

```
lowest : b       b, f    b, f, s b, x    b, x, f, highest: x, f    x, f, s x, o    x, p    x, s
```

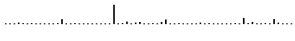
Cap.surface



n	missing	distinct
173	0	41

```
lowest :           d          d, e, y, i d, k       d, k, s
highest: t, w, d   w          w, t       y          y, s
```

cap.color



n	missing	distinct
173	0	67

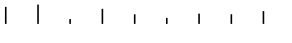
```
lowest : b            b, p, e, y    b, u          e            e, n
highest: y            y, n          y, o          y, o, g, n, r y, o, r, n
```

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
173	0	9

Value	a	a, d	d	e	f	p	s	x
Frequency	28	32	8	25	16	10	17	16	21
Proportion	0.162	0.185	0.046	0.145	0.092	0.058	0.098	0.092	0.121

gill.spacing

n	missing	distinct
173	0	4

Value	c	d	f
Frequency	71	70	22	10
Proportion	0.410	0.405	0.127	0.058

gill.color

n	missing	distinct
173	0	59

lowest : b b, p, w b, u e f , highest: y, n y, o, e y, r y, r, k y, w

stem.root

n	missing	distinct
173	0	6

Value	b	c	f	r	s
Frequency	146	9	2	3	4	9
Proportion	0.844	0.052	0.012	0.017	0.023	0.052

stem.surface

n	missing	distinct
173	0	15

Value	f	g	h	i	i, s	i, t	i, y	k	k, s	s	s, h	t	y
Frequency	108	3	5	1	11	1	1	1	4	1	15	1	7	13
Proportion	0.624	0.017	0.029	0.006	0.064	0.006	0.006	0.006	0.023	0.006	0.087	0.006	0.040	0.075

Value	y, s
Frequency	1
Proportion	0.006

stem.color

n	missing	distinct
173	0	41

lowest : b, u e e, n e, u, y e, y , highest: w, y y y, e, n y, n y, o, k

veil.type

n	missing	distinct
173	0	2

Value	u
Frequency	164	9
Proportion	0.948	0.052

veil.color

n	missing	distinct
173	0	8

Value	e, n	k	n	u	w	y	y, w
Frequency	152	1	1	1	1	15	1	1
Proportion	0.879	0.006	0.006	0.006	0.006	0.087	0.006	0.006

has.ring

n	missing	distinct
173	0	2

Value	f	t
Frequency	130	43
Proportion	0.751	0.249

ring.type

n	missing	distinct
173	0	14

Value	e	e, g	f	g	g, p	l	l, e	l, p	l, r	m	p	r	z
Frequency	7	6	1	137	2	2	2	1	1	2	1	2	3	6
Proportion	0.040	0.035	0.006	0.792	0.012	0.012	0.012	0.006	0.006	0.012	0.006	0.012	0.017	0.035

Spore.print.color

n	missing	distinct
173	0	9

Value	g	k	k, r	k, u	n	p	p, w	w
Frequency	155	1	5	1	1	3	3	1	3
Proportion	0.896	0.006	0.029	0.006	0.006	0.017	0.017	0.006	0.017

habitat

n	missing	distinct
173	0	21

```
lowest : d       d, h    g       g, d    g, d, h, highest: m       m, d    m, h    p, d    w
```

season

n	missing	distinct
173	0	10

Value	a	a, w	s	s, a, w	s, u	s, u, a	s, u, a, w
Frequency	16	15	1	1	3	5	13
Proportion	0.092	0.087	0.006	0.006	0.017	0.029	0.075

Value	u	u, a	u, a, w
Frequency	1	106	12
Proportion	0.006	0.613	0.069

cap.diameter_min

n	missing	distinct	Info	Mean	pMedian	Gmd	.05	.10	.25	.50	.75	.90	.95
173	0	14	0.976	4.043	3.5	3.038	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	50.0
Frequency	2	4	1	17	39	24	26	29	11	4	9	4	2	1
Proportion	0.012	0.023	0.006	0.098	0.225	0.139	0.150	0.168	0.064	0.023	0.052	0.023	0.012	0.006

```
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
```

stem.height_min

n	missing	distinct	Info	Mean	pMedian	Gmd	.05	.10	.25	.50	.75	.90	.95
173	0	12	0.957	4.306	4	2.233	2.0	2.0	3.0	4.0	5.0	6.8	8.0

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

n	missing	distinct	Info	Mean	pMedian	Gmd	.05	.10	.25	.50	.75	.90	.95
173	0	16	0.98	8.529	8	6.804	1	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	12.0	15.0	20.0
Frequency	3	1	9	18	12	12	19	7	1	10	42	1	20	16
Proportion	0.017	0.006	0.052	0.104	0.069	0.069	0.110	0.040	0.006	0.058	0.243	0.006	0.116	0.092

Value	30.0	40.0
Frequency	1	1
Proportion	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	.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

```
mushroom$name <- NULL
library(table1)
knitr::asis_output(table1(~ .|class, mushroom))
```

	e (N=77)	p (N=96)	Overall (N=173)
family			
Amanita Family	3 (3.9%)	5 (5.2%)	8 (4.6%)
Bolbitius Family	1 (1.3%)	2 (2.1%)	3 (1.7%)
Bolete Family	11 (14.3%)	3 (3.1%)	14 (8.1%)
Bracket Fungi	1 (1.3%)	6 (6.3%)	7 (4.0%)
Chanterelle Family	3 (3.9%)	0 (0%)	3 (1.7%)
Cortinarius Family	0 (0%)	11 (11.5%)	11 (6.4%)
Crepidotus Family	0 (0%)	1 (1.0%)	1 (0.6%)
Ear-Pick Family	0 (0%)	1 (1.0%)	1 (0.6%)
Entoloma Family	1 (1.3%)	6 (6.3%)	7 (4.0%)
Hydnum Family	1 (1.3%)	0 (0%)	1 (0.6%)
Ink Cap Family	6 (7.8%)	7 (7.3%)	13 (7.5%)
Jelly Discs Family	0 (0%)	1 (1.0%)	1 (0.6%)
Lepiota Family	2 (2.6%)	1 (1.0%)	3 (1.7%)
Morel Family	1 (1.3%)	0 (0%)	1 (0.6%)
Mushroom Family	4 (5.2%)	1 (1.0%)	5 (2.9%)
Oyster Mushroom Family	2 (2.6%)	0 (0%)	2 (1.2%)
Paxillus Family	0 (0%)	3 (3.1%)	3 (1.7%)
Pluteus Family	2 (2.6%)	0 (0%)	2 (1.2%)
Russula Family	11 (14.3%)	16 (16.7%)	27 (15.6%)
Saddle-Cup Family	0 (0%)	1 (1.0%)	1 (0.6%)
Stropharia Family	1 (1.3%)	7 (7.3%)	8 (4.6%)
Tricholoma Family	23 (29.9%)	20 (20.8%)	43 (24.9%)
Wax Gill Family	4 (5.2%)	4 (4.2%)	8 (4.6%)
cap.shape			
b	2 (2.6%)	8 (8.3%)	10 (5.8%)
b, f	2 (2.6%)	3 (3.1%)	5 (2.9%)
b, f, s	0 (0%)	1 (1.0%)	1 (0.6%)
b, x	0 (0%)	3 (3.1%)	3 (1.7%)
b, x, f	0 (0%)	1 (1.0%)	1 (0.6%)
c	1 (1.3%)	2 (2.1%)	3 (1.7%)
c, f	0 (0%)	2 (2.1%)	2 (1.2%)
c, x	1 (1.3%)	0 (0%)	1 (0.6%)
c, x, f	1 (1.3%)	0 (0%)	1 (0.6%)
f	4 (5.2%)	4 (4.2%)	8 (4.6%)
f, s	3 (3.9%)	5 (5.2%)	8 (4.6%)
f, x	1 (1.3%)	1 (1.0%)	2 (1.2%)
o	1 (1.3%)	7 (7.3%)	8 (4.6%)
p	0 (0%)	1 (1.0%)	1 (0.6%)
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	3 (3.9%)	1 (1.0%)	4 (2.3%)
p, x, f	2 (2.6%)	0 (0%)	2 (1.2%)
s	4 (5.2%)	5 (5.2%)	9 (5.2%)
s, o	2 (2.6%)	0 (0%)	2 (1.2%)

	e (N=77)	p (N=96)	Overall (N=173)
x	23 (29.9%)	25 (26.0%)	48 (27.7%)
x, f	14 (18.2%)	15 (15.6%)	29 (16.8%)
x, f, s	7 (9.1%)	6 (6.3%)	13 (7.5%)
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%)
Cap.surface			
	19 (24.7%)	21 (21.9%)	40 (23.1%)
d	4 (5.2%)	5 (5.2%)	9 (5.2%)
d, e, y, i	0 (0%)	1 (1.0%)	1 (0.6%)
d, k	1 (1.3%)	1 (1.0%)	2 (1.2%)
d, k, s	0 (0%)	1 (1.0%)	1 (0.6%)
d, s	1 (1.3%)	0 (0%)	1 (0.6%)
e	3 (3.9%)	2 (2.1%)	5 (2.9%)
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%)
g	5 (6.5%)	7 (7.3%)	12 (6.9%)
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%)
h	3 (3.9%)	2 (2.1%)	5 (2.9%)
h, s, d	1 (1.3%)	0 (0%)	1 (0.6%)
h, s, t	0 (0%)	1 (1.0%)	1 (0.6%)
h, t	6 (7.8%)	4 (4.2%)	10 (5.8%)
h, t, w	0 (0%)	1 (1.0%)	1 (0.6%)
h, t, y	0 (0%)	1 (1.0%)	1 (0.6%)
i	0 (0%)	4 (4.2%)	4 (2.3%)
i, e	0 (0%)	1 (1.0%)	1 (0.6%)
i, y	2 (2.6%)	0 (0%)	2 (1.2%)
k	0 (0%)	4 (4.2%)	4 (2.3%)
k, e	0 (0%)	1 (1.0%)	1 (0.6%)
l	2 (2.6%)	2 (2.1%)	4 (2.3%)
s	8 (10.4%)	5 (5.2%)	13 (7.5%)
s, d	1 (1.3%)	0 (0%)	1 (0.6%)
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%)
t	2 (2.6%)	10 (10.4%)	12 (6.9%)
t, h	1 (1.3%)	1 (1.0%)	2 (1.2%)
t, h, s	1 (1.3%)	0 (0%)	1 (0.6%)
t, w, d	0 (0%)	1 (1.0%)	1 (0.6%)
w	2 (2.6%)	3 (3.1%)	5 (2.9%)
w, t	1 (1.3%)	0 (0%)	1 (0.6%)
y	7 (9.1%)	7 (7.3%)	14 (8.1%)
y, s	1 (1.3%)	0 (0%)	1 (0.6%)
cap.color			
b	1 (1.3%)	0 (0%)	1 (0.6%)
b, p, e, y	0 (0%)	1 (1.0%)	1 (0.6%)

	e (N=77)	p (N=96)	Overall (N=173)
b, u	1 (1.3%)	0 (0%)	1 (0.6%)
e	0 (0%)	3 (3.1%)	3 (1.7%)
e, n	0 (0%)	2 (2.1%)	2 (1.2%)
e, n, p, w	0 (0%)	1 (1.0%)	1 (0.6%)
e, n, y	2 (2.6%)	0 (0%)	2 (1.2%)
e, o	0 (0%)	1 (1.0%)	1 (0.6%)
e, o, k	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%)
g	0 (0%)	1 (1.0%)	1 (0.6%)
g, k	1 (1.3%)	1 (1.0%)	2 (1.2%)
g, n	6 (7.8%)	4 (4.2%)	10 (5.8%)
g, n, k	0 (0%)	1 (1.0%)	1 (0.6%)
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	0 (0%)	1 (1.0%)	1 (0.6%)
g, u, n, p	1 (1.3%)	0 (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%)
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	22 (28.6%)	16 (16.7%)	38 (22.0%)
n ,w	1 (1.3%)	0 (0%)	1 (0.6%)
n, b	1 (1.3%)	1 (1.0%)	2 (1.2%)
n, e	1 (1.3%)	4 (4.2%)	5 (2.9%)
n, e, y	0 (0%)	1 (1.0%)	1 (0.6%)
n, g	3 (3.9%)	0 (0%)	3 (1.7%)
n, o	2 (2.6%)	2 (2.1%)	4 (2.3%)
n, o, e	1 (1.3%)	0 (0%)	1 (0.6%)
n, o, y, w	0 (0%)	1 (1.0%)	1 (0.6%)
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	3 (3.9%)	6 (6.3%)	9 (5.2%)
n, y, e	1 (1.3%)	0 (0%)	1 (0.6%)
n, y, w	1 (1.3%)	0 (0%)	1 (0.6%)
o	0 (0%)	2 (2.1%)	2 (1.2%)
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	0 (0%)	3 (3.1%)	3 (1.7%)
o, y, r	0 (0%)	1 (1.0%)	1 (0.6%)
p	0 (0%)	2 (2.1%)	2 (1.2%)
r	0 (0%)	1 (1.0%)	1 (0.6%)
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%)

	e (N=77)	p (N=96)	Overall (N=173)
u	0 (0%)	2 (2.1%)	2 (1.2%)
u, k	1 (1.3%)	0 (0%)	1 (0.6%)
w	6 (7.8%)	6 (6.3%)	12 (6.9%)
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%)
w, y	1 (1.3%)	1 (1.0%)	2 (1.2%)
w, y, g, n	0 (0%)	1 (1.0%)	1 (0.6%)
y	6 (7.8%)	4 (4.2%)	10 (5.8%)
y, n	0 (0%)	3 (3.1%)	3 (1.7%)
y, o	0 (0%)	1 (1.0%)	1 (0.6%)
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%)
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			
	10 (13.0%)	18 (18.8%)	28 (16.2%)
a	11 (14.3%)	21 (21.9%)	32 (18.5%)
a, d	5 (6.5%)	3 (3.1%)	8 (4.6%)
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%)
gill.spacing			
	31 (40.3%)	40 (41.7%)	71 (41.0%)
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%)
gill.color			
b	1 (1.3%)	0 (0%)	1 (0.6%)
b, p, w	0 (0%)	1 (1.0%)	1 (0.6%)
b, u	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	3 (3.9%)	1 (1.0%)	4 (2.3%)
g, k	1 (1.3%)	1 (1.0%)	2 (1.2%)
g, n	1 (1.3%)	2 (2.1%)	3 (1.7%)
g, n, u	0 (0%)	1 (1.0%)	1 (0.6%)
g, p	1 (1.3%)	0 (0%)	1 (0.6%)
g, r, w	0 (0%)	1 (1.0%)	1 (0.6%)
g, u	0 (0%)	1 (1.0%)	1 (0.6%)
g, w	2 (2.6%)	0 (0%)	2 (1.2%)
g, w, y	1 (1.3%)	0 (0%)	1 (0.6%)
k, n	2 (2.6%)	4 (4.2%)	6 (3.5%)
k, p	0 (0%)	1 (1.0%)	1 (0.6%)
k, p, w	1 (1.3%)	0 (0%)	1 (0.6%)
n	3 (3.9%)	8 (8.3%)	11 (6.4%)

	e (N=77)	p (N=96)	Overall (N=173)
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%)
o	2 (2.6%)	2 (2.1%)	4 (2.3%)
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%)
p	3 (3.9%)	5 (5.2%)	8 (4.6%)
p, n	1 (1.3%)	0 (0%)	1 (0.6%)
p, n, k	1 (1.3%)	0 (0%)	1 (0.6%)
p, w	3 (3.9%)	2 (2.1%)	5 (2.9%)
p, y	0 (0%)	1 (1.0%)	1 (0.6%)
p, y, r	0 (0%)	1 (1.0%)	1 (0.6%)
r	1 (1.3%)	0 (0%)	1 (0.6%)
r, y	0 (0%)	1 (1.0%)	1 (0.6%)
u, w	1 (1.3%)	0 (0%)	1 (0.6%)
w	21 (27.3%)	15 (15.6%)	36 (20.8%)
w, b, n	0 (0%)	1 (1.0%)	1 (0.6%)
w, g	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, n	3 (3.9%)	2 (2.1%)	5 (2.9%)
w, p	1 (1.3%)	2 (2.1%)	3 (1.7%)
w, p, y	1 (1.3%)	0 (0%)	1 (0.6%)
w, r	0 (0%)	1 (1.0%)	1 (0.6%)
w, u, g, n	1 (1.3%)	0 (0%)	1 (0.6%)
w, y	3 (3.9%)	2 (2.1%)	5 (2.9%)
w, y, g, n	0 (0%)	1 (1.0%)	1 (0.6%)
y	6 (7.8%)	7 (7.3%)	13 (7.5%)
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	1 (1.3%)	0 (0%)	1 (0.6%)
y, r, k	0 (0%)	1 (1.0%)	1 (0.6%)
y, w	0 (0%)	1 (1.0%)	1 (0.6%)
stem.root			
	67 (87.0%)	79 (82.3%)	146 (84.4%)
b	6 (7.8%)	3 (3.1%)	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%)
s	4 (5.2%)	5 (5.2%)	9 (5.2%)
stem.surface			
	53 (68.8%)	55 (57.3%)	108 (62.4%)
f	0 (0%)	3 (3.1%)	3 (1.7%)

	e (N=77)	p (N=96)	Overall (N=173)
g	0 (0%)	5 (5.2%)	5 (2.9%)
h	0 (0%)	1 (1.0%)	1 (0.6%)
i	4 (5.2%)	7 (7.3%)	11 (6.4%)
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%)
k	1 (1.3%)	3 (3.1%)	4 (2.3%)
k, s	1 (1.3%)	0 (0%)	1 (0.6%)
s	9 (11.7%)	6 (6.3%)	15 (8.7%)
s, h	0 (0%)	1 (1.0%)	1 (0.6%)
t	3 (3.9%)	4 (4.2%)	7 (4.0%)
y	4 (5.2%)	9 (9.4%)	13 (7.5%)
y, s	1 (1.3%)	0 (0%)	1 (0.6%)
stem.color			
b, u	1 (1.3%)	0 (0%)	1 (0.6%)
e	0 (0%)	1 (1.0%)	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%)
f	0 (0%)	3 (3.1%)	3 (1.7%)
g	2 (2.6%)	0 (0%)	2 (1.2%)
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%)
k	0 (0%)	1 (1.0%)	1 (0.6%)
k, n	1 (1.3%)	1 (1.0%)	2 (1.2%)
l, r, w	1 (1.3%)	0 (0%)	1 (0.6%)
n	15 (19.5%)	20 (20.8%)	35 (20.2%)
n, e	0 (0%)	2 (2.1%)	2 (1.2%)
n, g	1 (1.3%)	1 (1.0%)	2 (1.2%)
n, o	1 (1.3%)	1 (1.0%)	2 (1.2%)
n, p	0 (0%)	1 (1.0%)	1 (0.6%)
n, p, w	1 (1.3%)	0 (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%)
o	0 (0%)	1 (1.0%)	1 (0.6%)
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%)
p	0 (0%)	2 (2.1%)	2 (1.2%)
r, y	0 (0%)	1 (1.0%)	1 (0.6%)
u	1 (1.3%)	1 (1.0%)	2 (1.2%)
u, e	0 (0%)	1 (1.0%)	1 (0.6%)
w	32 (41.6%)	25 (26.0%)	57 (32.9%)
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%)

	e (N=77)	p (N=96)	Overall (N=173)
y	5 (6.5%)	8 (8.3%)	13 (7.5%)
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%)
veil.type			
	74 (96.1%)	90 (93.8%)	164 (94.8%)
u	3 (3.9%)	6 (6.3%)	9 (5.2%)
veil.color			
	68 (88.3%)	84 (87.5%)	152 (87.9%)
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	1 (1.3%)	0 (0%)	1 (0.6%)
y, w	1 (1.3%)	0 (0%)	1 (0.6%)
has.ring			
f	60 (77.9%)	70 (72.9%)	130 (75.1%)
t	17 (22.1%)	26 (27.1%)	43 (24.9%)
ring.type			
	4 (5.2%)	3 (3.1%)	7 (4.0%)
e	3 (3.9%)	3 (3.1%)	6 (3.5%)
e, g	0 (0%)	1 (1.0%)	1 (0.6%)
f	61 (79.2%)	76 (79.2%)	137 (79.2%)
g	2 (2.6%)	0 (0%)	2 (1.2%)
g, p	0 (0%)	2 (2.1%)	2 (1.2%)
l	1 (1.3%)	1 (1.0%)	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%)
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%)
Spore.print.color			
	72 (93.5%)	83 (86.5%)	155 (89.6%)
g	1 (1.3%)	0 (0%)	1 (0.6%)
k	1 (1.3%)	4 (4.2%)	5 (2.9%)
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	1 (1.3%)	2 (2.1%)	3 (1.7%)
p, w	0 (0%)	1 (1.0%)	1 (0.6%)
w	2 (2.6%)	1 (1.0%)	3 (1.7%)
habitat			
d	47 (61.0%)	57 (59.4%)	104 (60.1%)
d, h	1 (1.3%)	3 (3.1%)	4 (2.3%)
g	1 (1.3%)	10 (10.4%)	11 (6.4%)
g, d	6 (7.8%)	4 (4.2%)	10 (5.8%)
g, d, h	1 (1.3%)	0 (0%)	1 (0.6%)
g, h, d	1 (1.3%)	2 (2.1%)	3 (1.7%)

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