HW2

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一、變數定義

```
mushroom_data <- data.frame(
  Variable = c('family', 'name', 'class', 'cap.diameter_min', 'cap.diameter_max', 'cap.shape',
               'Cap.surface', 'cap.color', 'does.bruise.or.bleed', 'gill.attachment',
               'gill.spacing', 'gill.color', 'stem.height_min', 'stem.height_max', 'stem.width_min',
               'stem.width_max', 'stem.root', 'stem.surface', 'stem.color', 'veil.type', 'veil.color',
               'has.ring', 'ring.type', 'Spore.print.color', 'habitat', 'season',
               'cap.diameter_mean', 'stem.height_mean', 'stem.width_mean'),
  `Data Type` = c('character', 'character', 'factor', 'numerical', 'numerical', 'factor', 'factor', 'fac
                  'factor', 'numerical', 'numerical', 'numerical', 'numerical', 'factor', 'facotr', 'fac
                  'factor', 'factor', 'factor', 'factor', 'numerical', 'numerical', 'numerical'),
  Definition = c("Mushrooms' family", "Mushrooms' name", "Edible or not", "The minimum of mushrooms' cap
                 "The maximum of mushrooms' cap diameter", "The shape of mushrooms' cap", "The surface o
                 "The color of mushrooms' cap", "Mushrooms' bruise or bleed or not", "How the gill attac
                 "The space between the gill", "The color of the gill", "The minimum height of mushrooms
                 "The maximum height of mushrooms' stem", "The minimum width of mushrooms' stem",
                 "The maximum width of mushrooms' stem", "The root of mushrooms' stem", "The surface of
                 "The color of mushrooms' stem", "The type of veil is partial or universal", "The color
                 "Mushrooms have ring or not", "What the type of mushrooms' ring is", "The color of mush
                 "Mushrooms' habitat", "The season mushroom grows", "The mean of mushrooms' cap diameter
                 "The mean height of mushrooms' stem", "The mean width of mushrooms' stem"),
  Note = c("", "", "poisonous=p, edible=e", "", "", "bell=b, conical=c, convex=x, flat=f, sunken=s, sphe
           "fibrous=i, grooves=g, scaly=y, smooth=s, shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w,
           "brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange
           "bruise-or-bleeding=t, no=f", "adnate=a, adnexed=x, decurrent=d, free=e, sinuate=s, pores=p,
           "close=c, distant=d, none=f", "brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, whi
           "", "", "", "", "bulbous=b, swollen=s, club=c, cup=u, equal=e, rhizomorphs=z, rooted=r",
           "fibrous=i, grooves=g, scaly=y, smooth=s, shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w,
           "brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange
           "ring=t, none=f", "cobwebby=c, evanescent=e, flaring=r, grooved=g, large=l, pendant=p, sheath
           "brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange
           "grasses=g, leaves=l, meadows=m, paths=p, heaths=h, urban=u, waste=w, woods=d", "spring=s, su
           "", "", ""),
```

```
  stringsAsFactors = FALSE
)

knitr::kable(mushroom_data)
```

Variable	Data.Type	Definition	Note
family	character	Mushrooms' family	
name	character	Mushrooms' name	
class	factor	Edible or not	poisonous=p, edible=e
cap.diameter_min	numeric	The minimum of mushrooms' cap diameter	
cap.diameter_max	numeric	The maximum of mushrooms' cap diameter	
cap.shape	factor	The shape of mushrooms' cap	bell=b, conical=c, convex=x, flat=f, sunken=s, spherical=p, others=o
Cap.surface	factor	The surface of mushrooms' cap	fibrous=i, grooves=g, scaly=y, smooth=s, shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w, fleshy=e
cap.color	factor	The color of mushrooms' 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	Mushrooms' bruise or bleed or not	bruise-or-bleeding=t, no=f
gill.attachment	factor	How the gill attach	adnate=a, adnexed=x, decurrent=d, free=e, sinuate=s, pores=p, none=f, unknown=x
gill.spacing	factor	The space between the gill	close=c, distant=d, none=f
gill.color	factor	The color of the gill	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k, none=f
stem.height_min	numeric	The minimum height of mushrooms' stem	
stem.height_max	numeric	The maximum height of mushrooms' stem	
stem.width_min	numeric	The minimum width of mushrooms' stem	
stem.width_max	numeric	The maximum width of mushrooms' stem	
stem.root	factor	The root of mushrooms' stem	bulbous=b, swollen=s, club=c, cup=u, equal=e, rhizomorphs=z, rooted=r

Variable	Data.Type	Definition	Note
stem.surface	facotr	The surface of mushrooms' stem	fibrous=i, grooves=g, scaly=y, smooth=s, shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w, fleshy=e, none=f
stem.color	factor	The color of mushrooms' stem	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k, none=f
veil.type	factor	The type of veil is partial or universal	partial=p, universal=u
veil.color	factor	The color of mushrooms' veil	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k, none=f
has.ring	factor	Mushrooms have ring or not	ring=t, none=f
ring.type	factor	What the type of mushrooms' ring is	cobwebby=c, evanescent=e, flaring=r, grooved=g, large=l, pendant=p, sheathing=s, zone=z, scaly=y, movable=m, none=f, unknown=z
Spore.print.color	factor	The color of mushrooms' spore print	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k
habitat	factor	Mushrooms' habitat	grasses=g, leaves=l, meadows=m, paths=p, heaths=h, urban=u, waste=w, woods=d
season	factor	The season mushroom grows	spring=s, summer=u, autumn=a, winter=w
cap.diameter_mean	numeric	The mean of mushrooms' cap diameter	
stem.height_mean	numeric	The mean height of mushrooms' stem	
stem.width_mean	numeric	The mean width of mushrooms' stem	

二、讀取資料

```
# R Interface to Python
library(reticulate)
library(Hmisc)
library(tidyr)
library(dplyr)

df <- read.csv("C:/Users/ASUS/Downloads/mushroom/primary_data.csv", sep=";", stringsAsFactors=FALSE)

process_numeric <- function(column) {
  df <- df %>%
    separate(column, into = c(paste0(column, "_min"), paste0(column, "_max")), sep = ",", fill = "right'
    mutate(
      across(starts_with(column), ~ as.numeric(gsub("\\[|\\]", "", .)))
    ) %>%
    mutate(
      !!paste0(column, "_mean") := ifelse(is.na(!!sym(paste0(column, "_max"))), !!sym(paste0(column, "_m
```

```
      !!paste0(column, "_min") := ifelse(!is.na(!!sym(paste0(column, "_max"))), !!sym(paste0(column, "_m
      !!paste0(column, "_max") := ifelse(!is.na(!!sym(paste0(column, "_min"))), !!sym(paste0(column, "_m
    ) %>%

  return(df)
}

numeric_columns <- c("cap.diameter", "stem.height", "stem.width")
for (col in numeric_columns) {
  df <- process_numeric(col)
}

category_map <- list(
  "cap-shape" = c(b="bell", c="conical", x="convex", f="flat", s="sunken", p="spherical", o="others"),
  "cap-surface" = c(i="fibrous", g="grooves", y="scaly", s="smooth", h="shiny", l="leathery", k="silky",
  "cap-color" = c(n="brown", b="buff", g="gray", r="green", p="pink", u="purple", e="red", w="white", y=
  "does-bruise-bleed" = c(t="bruises-or-bleeding", f="no"),
  "gill-attachment" = c(a="adnate", x="adnexed", d="decurrent", e="free", s="sinuate", p="pores", f="non
  "gill-spacing" = c(c="close", d="distant", f="none"),
  "gill-color" = c(n="brown", b="buff", g="gray", r="green", p="pink", u="purple", e="red", w="white", y
  "stem-root" = c(b="bulbous", s="swollen", c="club", u="cup", e="equal", z="rhizomorphs", r="rooted"),
  "stem-surface" = c(i="fibrous", g="grooves", y="scaly", s="smooth", h="shiny", l="leathery", k="silky"
  "stem-color" = c(n="brown", b="buff", g="gray", r="green", p="pink", u="purple", e="red", w="white", y
  "veil-type" = c(p="partial", u="universal"),
  "veil-color" = c(n="brown", b="buff", g="gray", r="green", p="pink", u="purple", e="red", w="white", y
  "has-ring" = c(t="ring", f="none"),
  "ring-type" = c(c="cobwebby", e="evanescent", r="flaring", g="grooved", l="large", p="pendant", s="she
  "spore-print-color" = c(n="brown", b="buff", g="gray", r="green", p="pink", u="purple", e="red", w="wh
  "habitat" = c(g="grasses", l="leaves", m="meadows", p="paths", h="heaths", u="urban", w="waste", d="wo
  "season" = c(s="spring", u="summer", a="autumn", w="winter")
)

for (col in c("cap-shape", "habitat", "season")) {
  df[[col]] <- unlist(lapply(df[[col]], function(x) {
    if (is.na(x)) return(NA)
    values <- unlist(strsplit(gsub("\\[|\\]", "", x), ","))

    if (col %in% c("habitat", "season")) {
      return(paste(values, collapse=", "))
    } else {
      mapped_values <- category_map[[col]][values]
      return(paste(mapped_values, collapse=", "))
    }
  }))
}

df <- df %>%
  mutate(across(everything(), ~ gsub("\\[|\\]", "", .)))  #   `[]`

df <- df %>%
  mutate(
    across(c("cap.diameter_min", "cap.diameter_max", "stem.height_min", "stem.height_max",
             "stem.width_min", "stem.width_max", "cap.diameter_mean", "stem.height_mean", "stem.width_me
```

```
            ~ as.numeric(.))
  )
latex(describe(df), file="")
```

df
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.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.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
133	40	40

```
lowest : d          d, e, y, i d, k       d, k, s    d, 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
145	28	8

Value	a	a, d	d	e	f	p	s	x
Frequency	32	8	25	16	10	17	16	21
Proportion	0.221	0.055	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 b, p, w b, u e f , highest: y, n y, o, e y, r y, r, k y, w

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.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.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	i, s	i, t	i, y	k	k, s	s	s, h	t	y	y, s
Frequency	3	5	1	11	1	1	1	4	1	15	1	7	13	1
Proportion	0.046	0.077	0.015	0.169	0.015	0.015	0.015	0.062	0.015	0.231	0.015	0.108	0.200	0.015

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	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	y, w
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	e, g	f	g	g, p	l	l, e	l, p	l, r	m	p	r	z
Frequency	6	1	137	2	2	2	1	1	2	1	2	3	6
Proportion	0.036	0.006	0.825	0.012	0.012	0.012	0.006	0.006	0.012	0.006	0.012	0.018	0.036

Spore.print.color

n	missing	distinct
18	155	8

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

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
Frequency	16	15	1	1	3	5
Proportion	0.092	0.087	0.006	0.006	0.017	0.029

Value	s, u, a, w	u	u, a	u, a, w
Frequency	13	1	106	12
Proportion	0.075	0.006	0.613	0.069

cap.diameter_mean

n	missing	distinct	Info	Mean
1	172	1	0	50

Value	50
Frequency	1
Proportion	1

stem.height_mean

n	missing	distinct	Info	Mean
3	170	1	0	0

Value	0
Frequency	3
Proportion	1

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

三、資料簡述

1. 整體分析：
   整筆資料有173個觀測值和29個變數，代表共有173種蘑菇，29個變數中，有family、name、class、 cap.diameter_min、 cap.diameter_max、 cap.shape、 Cap.surface、 cap.color、does.bruise.or.bleed、gill.attachment、gill.spacing、gill.color、stem.height_min、stem.height_max、stem.width_min、 stem.width_max、 stem.root、 stem.surface、 stem.color、 veil.type、veil.color、has.ring、ring.type、Spore.print.color、habitat、season、 cap.diameter_mean、stem.height_mean、stem.width_mean。
2. cap.diameter_min、cap.diameter_max和cap.diameter_mean：
   cap.diameter_min、cap.diameter_max各有一缺失值，該缺失值僅提供mean故分別處理。
3. stem.height_min、stem.height_max和stem.height_mean：
   stem.height_min、stem.height_max各有三缺失值，該缺失值僅提供mean故分別處理。
4. stem.width_min、stem.width_max和stem.width_mean：
   stem.width_min、stem.width_max各有十一缺失值，該缺失值僅提供mean故分別處理。
5. Cap.surface：
   有40項缺失值。
6. gill.attachment：
   有71項缺失值。
7. stem.root：
   有146項缺失值。
8. stem.surface：
   有108項缺失值。
9. veil.type：
   有164項缺失值。
10. veil.color：
    有152項缺失值。

11. ring.type：
    有7項缺失值。
12. Spore.print.color：
    有155項缺失值。

四、table one

```
library(table1)

table1(~family+name+cap.diameter_min+cap.diameter_max+cap.shape+Cap.surface+cap.color+does.bruise.or.ble
       +stem.height_min+stem.height_max+stem.width_min+stem.width_max+stem.root+stem.surface+stem.color+
       +ring.type+Spore.print.color+habitat+season+cap.diameter_mean+stem.height_mean+stem.width_mean|cl
)
```

	e	p	Overall
	(N=77)	(N=96)	(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%)
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%)
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%)
Pluteus Family	2 (2.6%)	0 (0%)	2 (1.2%)
Russula Family	11 (14.3%)	16 (16.7%)	27 (15.6%)
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%)
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%)
Jelly Discs Family	0 (0%)	1 (1.0%)	1 (0.6%)
Paxillus Family	0 (0%)	3 (3.1%)	3 (1.7%)
Saddle-Cup Family	0 (0%)	1 (1.0%)	1 (0.6%)
name			
Amethyst Deceiver	1 (1.3%)	0 (0%)	1 (0.6%)
Aniseed Funnel Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Bare-toothed Russula	1 (1.3%)	0 (0%)	1 (0.6%)
Bay Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Blackening Russula	1 (1.3%)	0 (0%)	1 (0.6%)
Blackish Purple Russula	1 (1.3%)	0 (0%)	1 (0.6%)
Bleeding Brown Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Bonnet Bell Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Branched Oyster Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Brown Birch Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Brown Stew Fungus	1 (1.3%)	0 (0%)	1 (0.6%)

	e	p	Overall
Bulbous Honey Fungus	1 (1.3%)	0 (0%)	1 (0.6%)
Cep	1 (1.3%)	0 (0%)	1 (0.6%)
Changeable Melanoleuca	1 (1.3%)	0 (0%)	1 (0.6%)
Chanterelle	1 (1.3%)	0 (0%)	1 (0.6%)
Clouded Agaric	1 (1.3%)	0 (0%)	1 (0.6%)
Clustered Brown Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Coconut-scented Milk Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Common Crumble Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Common Funnel Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Common Morel	1 (1.3%)	0 (0%)	1 (0.6%)
Common Yellow Russula	1 (1.3%)	0 (0%)	1 (0.6%)
Crab-scented Russula	1 (1.3%)	0 (0%)	1 (0.6%)
Cultivated Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Dryad’s Saddle	1 (1.3%)	0 (0%)	1 (0.6%)
Fairies’ Bonnets	1 (1.3%)	0 (0%)	1 (0.6%)
Fairy Parasol	1 (1.3%)	0 (0%)	1 (0.6%)
Fairy Ring Champignon	1 (1.3%)	0 (0%)	1 (0.6%)
False Death Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Fawn Pluteus	1 (1.3%)	0 (0%)	1 (0.6%)
Field Blewit	1 (1.3%)	0 (0%)	1 (0.6%)
Field Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Glistening Ink Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Greasy Tough Shank	1 (1.3%)	0 (0%)	1 (0.6%)
Grey Tricholoma	1 (1.3%)	0 (0%)	1 (0.6%)
Hedgehog Fungus	1 (1.3%)	0 (0%)	1 (0.6%)
Herald of Winter	1 (1.3%)	0 (0%)	1 (0.6%)
Honey Fungus	1 (1.3%)	0 (0%)	1 (0.6%)
Horn of Plenty	1 (1.3%)	0 (0%)	1 (0.6%)
Horse Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Ivory Wax Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Larch Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Meadow Wax Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Milky Bell Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Orange Birch Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Oyster Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Parasitic Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Parasol Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Peppery Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Peppery Milk Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Porcelain Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Red-cracked Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Saffron Milk Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Scaly Tricholoma	1 (1.3%)	0 (0%)	1 (0.6%)
Scarlet Hood	1 (1.3%)	0 (0%)	1 (0.6%)
Shaggy Ink Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Shaggy Parasol	1 (1.3%)	0 (0%)	1 (0.6%)
Shallow-pored Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Slippery Jack	1 (1.3%)	0 (0%)	1 (0.6%)
Small Bleeding Bell Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Spring Agaric	1 (1.3%)	0 (0%)	1 (0.6%)
St George’s Mushroom	1 (1.3%)	0 (0%)	1 (0.6%)
Tawny Grisette	1 (1.3%)	0 (0%)	1 (0.6%)

	e	p	Overall
The Blusher	1 (1.3%)	0 (0%)	1 (0.6%)
The Charcoal Burner	1 (1.3%)	0 (0%)	1 (0.6%)
The Deceiver	1 (1.3%)	0 (0%)	1 (0.6%)
The Miller	1 (1.3%)	0 (0%)	1 (0.6%)
Tubed Chanterelle	1 (1.3%)	0 (0%)	1 (0.6%)
Two-toned Crumble Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Veined Pluteus	1 (1.3%)	0 (0%)	1 (0.6%)
Velvet Shank	1 (1.3%)	0 (0%)	1 (0.6%)
Wood Blewit	1 (1.3%)	0 (0%)	1 (0.6%)
Yellow-brown Tricholoma	1 (1.3%)	0 (0%)	1 (0.6%)
Yellow-cracked Bolete	1 (1.3%)	0 (0%)	1 (0.6%)
Yellow-gilled Russula	1 (1.3%)	0 (0%)	1 (0.6%)
Yellow-stemmed Bell Cap	1 (1.3%)	0 (0%)	1 (0.6%)
Yellow Swamp Russula	1 (1.3%)	0 (0%)	1 (0.6%)
Apricot Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Beechwood Sickener	0 (0%)	1 (1.0%)	1 (0.6%)
Birch Russula	0 (0%)	1 (1.0%)	1 (0.6%)
Bitter Bolete	0 (0%)	1 (1.0%)	1 (0.6%)
Blackening Wax Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Blood-red Cortinarius	0 (0%)	1 (1.0%)	1 (0.6%)
Blue Leptonia	0 (0%)	1 (1.0%)	1 (0.6%)
Brick Caps	0 (0%)	1 (1.0%)	1 (0.6%)
Brown Bell Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Brown Goblet	0 (0%)	1 (1.0%)	1 (0.6%)
Brown Roll-rim	0 (0%)	1 (1.0%)	1 (0.6%)
Charcoal Pholiota	0 (0%)	1 (1.0%)	1 (0.6%)
Club-footed Funnel Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Clustered Tough Shank	0 (0%)	1 (1.0%)	1 (0.6%)
Common Ink Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Common White Inocybe	0 (0%)	1 (1.0%)	1 (0.6%)
Dark-centred Hebeloma	0 (0%)	1 (1.0%)	1 (0.6%)
Death Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Destroying Angel	0 (0%)	1 (1.0%)	1 (0.6%)
Dotted-stemmed Bolete	0 (0%)	1 (1.0%)	1 (0.6%)
Dung Roundhead	0 (0%)	1 (1.0%)	1 (0.6%)
Ear-pick Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Egg-shell Toadstool	0 (0%)	1 (1.0%)	1 (0.6%)
Egg Yolk Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Elfin’s Saddle	0 (0%)	1 (1.0%)	1 (0.6%)
False Chanterelle	0 (0%)	1 (1.0%)	1 (0.6%)
False Panther Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Fleecy Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Fly Agaric	0 (0%)	1 (1.0%)	1 (0.6%)
Fragile Russula	0 (0%)	1 (1.0%)	1 (0.6%)
Fuzzy Polypore	0 (0%)	1 (1.0%)	1 (0.6%)
Geranium-scented Russula	0 (0%)	1 (1.0%)	1 (0.6%)
Grass-green Russula	0 (0%)	1 (1.0%)	1 (0.6%)
Hairy Stereum	0 (0%)	1 (1.0%)	1 (0.6%)
Hay Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Horse-hair Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Ivory Clitocybe	0 (0%)	1 (1.0%)	1 (0.6%)
Jelly Babies	0 (0%)	1 (1.0%)	1 (0.6%)

	e	p	Overall
Lilac Bell Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Little Wheel Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Livid Entoloma	0 (0%)	1 (1.0%)	1 (0.6%)
Lurid Bolete	0 (0%)	1 (1.0%)	1 (0.6%)
Magic Mushroom	0 (0%)	1 (1.0%)	1 (0.6%)
Magpie Ink Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Moss Pixy Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Oak Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Olive-brown Panellus	0 (0%)	1 (1.0%)	1 (0.6%)
Orange-red Wax Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Orange Bell Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Orange Moss Agaric	0 (0%)	1 (1.0%)	1 (0.6%)
Panther Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Parrot Wax Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Petticoat Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Plums and custard	0 (0%)	1 (1.0%)	1 (0.6%)
Poison Pie	0 (0%)	1 (1.0%)	1 (0.6%)
Purple Cortinarius	0 (0%)	1 (1.0%)	1 (0.6%)
Red-banded Cortinarius	0 (0%)	1 (1.0%)	1 (0.6%)
Red-staining Inocybe	0 (0%)	1 (1.0%)	1 (0.6%)
Rooting Shank	0 (0%)	1 (1.0%)	1 (0.6%)
Rufous Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Russet Tough Shank	0 (0%)	1 (1.0%)	1 (0.6%)
Rusty Carpet Ink Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Rusty Wood Rotter	0 (0%)	1 (1.0%)	1 (0.6%)
Saffron Parasol	0 (0%)	1 (1.0%)	1 (0.6%)
Shaggy Pholiota	0 (0%)	1 (1.0%)	1 (0.6%)
Silky Nolanea	0 (0%)	1 (1.0%)	1 (0.6%)
Silver Leaf Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Slimy Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Small Brown Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Soap-scented Tricholoma	0 (0%)	1 (1.0%)	1 (0.6%)
Soft Slipper Toadstool	0 (0%)	1 (1.0%)	1 (0.6%)
Spectacular Gymnopile	0 (0%)	1 (1.0%)	1 (0.6%)
Spotted Tough Shank	0 (0%)	1 (1.0%)	1 (0.6%)
Spruce Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Stinking Parasol	0 (0%)	1 (1.0%)	1 (0.6%)
Stinking Russula	0 (0%)	1 (1.0%)	1 (0.6%)
Straw-coloured Inocybe	0 (0%)	1 (1.0%)	1 (0.6%)
Striated Nolanea	0 (0%)	1 (1.0%)	1 (0.6%)
Stump Bell Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Sulphur Tricholoma	0 (0%)	1 (1.0%)	1 (0.6%)
Sulphur Tuft	0 (0%)	1 (1.0%)	1 (0.6%)
Sweet Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
The Sickener	0 (0%)	1 (1.0%)	1 (0.6%)
Tufted Bell Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Turban Fungus	0 (0%)	1 (1.0%)	1 (0.6%)
Ugly Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Umbrella Navel Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Velvet Roll-rim	0 (0%)	1 (1.0%)	1 (0.6%)
Verdigris Toadstool	0 (0%)	1 (1.0%)	1 (0.6%)
Weeping Widow	0 (0%)	1 (1.0%)	1 (0.6%)

	e	p	Overall
White Leptonia	0 (0%)	1 (1.0%)	1 (0.6%)
White Saddle	0 (0%)	1 (1.0%)	1 (0.6%)
Wood Woolly-foot	0 (0%)	1 (1.0%)	1 (0.6%)
Woolly Milk Cap	0 (0%)	1 (1.0%)	1 (0.6%)
Yellow-staining Mushroom	0 (0%)	1 (1.0%)	1 (0.6%)
Yellow Wax cap	0 (0%)	1 (1.0%)	1 (0.6%)
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.shape			
b	2 (2.6%)	8 (8.3%)	10 (5.8%)
b, f	2 (2.6%)	3 (3.1%)	5 (2.9%)
c	1 (1.3%)	2 (2.1%)	3 (1.7%)
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, 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%)
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, p	1 (1.3%)	1 (1.0%)	2 (1.2%)
x, s	1 (1.3%)	2 (2.1%)	3 (1.7%)
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, f	0 (0%)	2 (2.1%)	2 (1.2%)
p	0 (0%)	1 (1.0%)	1 (0.6%)
x, o	0 (0%)	1 (1.0%)	1 (0.6%)
Cap.surface			
	19 (24.7%)	21 (21.9%)	40 (23.1%)
d	4 (5.2%)	5 (5.2%)	9 (5.2%)
d, k	1 (1.3%)	1 (1.0%)	2 (1.2%)
d, s	1 (1.3%)	0 (0%)	1 (0.6%)
e	3 (3.9%)	2 (2.1%)	5 (2.9%)
e, y	1 (1.3%)	0 (0%)	1 (0.6%)
g	5 (6.5%)	7 (7.3%)	12 (6.9%)
g, s, h, t	1 (1.3%)	0 (0%)	1 (0.6%)
g, s, t	1 (1.3%)	0 (0%)	1 (0.6%)

	e	p	Overall
h	3 (3.9%)	2 (2.1%)	5 (2.9%)
h, s, d	1 (1.3%)	0 (0%)	1 (0.6%)
h, t	6 (7.8%)	4 (4.2%)	10 (5.8%)
i, y	2 (2.6%)	0 (0%)	2 (1.2%)
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, 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%)
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%)
d, e, y, i	0 (0%)	1 (1.0%)	1 (0.6%)
d, k, s	0 (0%)	1 (1.0%)	1 (0.6%)
e, k, s, h	0 (0%)	1 (1.0%)	1 (0.6%)
e, t, k	0 (0%)	1 (1.0%)	1 (0.6%)
g, h	0 (0%)	1 (1.0%)	1 (0.6%)
g, s, d	0 (0%)	1 (1.0%)	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%)
i	0 (0%)	4 (4.2%)	4 (2.3%)
i, e	0 (0%)	1 (1.0%)	1 (0.6%)
k	0 (0%)	4 (4.2%)	4 (2.3%)
k, e	0 (0%)	1 (1.0%)	1 (0.6%)
s, h	0 (0%)	1 (1.0%)	1 (0.6%)
s, i	0 (0%)	1 (1.0%)	1 (0.6%)
t, w, d	0 (0%)	1 (1.0%)	1 (0.6%)
cap.color			
b	1 (1.3%)	0 (0%)	1 (0.6%)
b, u	1 (1.3%)	0 (0%)	1 (0.6%)
e, n, y	2 (2.6%)	0 (0%)	2 (1.2%)
g, k	1 (1.3%)	1 (1.0%)	2 (1.2%)
g, n	6 (7.8%)	4 (4.2%)	10 (5.8%)
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, 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, 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, p, e	1 (1.3%)	1 (1.0%)	2 (1.2%)

	e	p	Overall
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, b	1 (1.3%)	0 (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%)
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, y	1 (1.3%)	1 (1.0%)	2 (1.2%)
y	6 (7.8%)	4 (4.2%)	10 (5.8%)
b, p, e, y	0 (0%)	1 (1.0%)	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, 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, 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%)
l, k	0 (0%)	1 (1.0%)	1 (0.6%)
n, e, y	0 (0%)	1 (1.0%)	1 (0.6%)
n, o, y, w	0 (0%)	1 (1.0%)	1 (0.6%)
o	0 (0%)	2 (2.1%)	2 (1.2%)
o, e, n, k	0 (0%)	1 (1.0%)	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%)
u	0 (0%)	2 (2.1%)	2 (1.2%)
w, u	0 (0%)	1 (1.0%)	1 (0.6%)
w, y, g, n	0 (0%)	1 (1.0%)	1 (0.6%)
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			

	e	p	Overall
	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, u	1 (1.3%)	0 (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, p	1 (1.3%)	0 (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, w	1 (1.3%)	0 (0%)	1 (0.6%)
n	3 (3.9%)	8 (8.3%)	11 (6.4%)
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%)
r	1 (1.3%)	0 (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, 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, u, g, n	1 (1.3%)	0 (0%)	1 (0.6%)
w, y	3 (3.9%)	2 (2.1%)	5 (2.9%)
y	6 (7.8%)	7 (7.3%)	13 (7.5%)
y, e, n	1 (1.3%)	0 (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, r	1 (1.3%)	0 (0%)	1 (0.6%)
b, p, w	0 (0%)	1 (1.0%)	1 (0.6%)
e	0 (0%)	1 (1.0%)	1 (0.6%)
g, n, u	0 (0%)	1 (1.0%)	1 (0.6%)

	e	p	Overall
g, r, w	0 (0%)	1 (1.0%)	1 (0.6%)
g, u	0 (0%)	1 (1.0%)	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%)
p, y	0 (0%)	1 (1.0%)	1 (0.6%)
p, y, r	0 (0%)	1 (1.0%)	1 (0.6%)
r, y	0 (0%)	1 (1.0%)	1 (0.6%)
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, r	0 (0%)	1 (1.0%)	1 (0.6%)
w, y, g, n	0 (0%)	1 (1.0%)	1 (0.6%)
y, g, k	0 (0%)	1 (1.0%)	1 (0.6%)
y, o, e	0 (0%)	1 (1.0%)	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.height_min			
Mean (SD)	4.52 (2.20)	4.27 (2.22)	4.38 (2.21)
Median [Min, Max]	4.00 [2.00, 15.0]	4.00 [1.00, 15.0]	4.00 [1.00, 15.0]
Missing	0 (0%)	3 (3.1%)	3 (1.7%)
stem.height_max			
Mean (SD)	9.58 (5.03)	8.57 (3.80)	9.03 (4.41)
Median [Min, Max]	8.00 [3.00, 35.0]	8.00 [2.00, 20.0]	8.00 [2.00, 35.0]
Missing	0 (0%)	3 (3.1%)	3 (1.7%)
stem.width_min			
Mean (SD)	10.2 (6.90)	7.67 (5.65)	8.83 (6.36)
Median [Min, Max]	10.0 [1.00, 40.0]	5.00 [0.500, 20.0]	8.00 [0.500, 40.0]
Missing	4 (5.2%)	7 (7.3%)	11 (6.4%)
stem.width_max			
Mean (SD)	19.2 (15.9)	14.4 (11.8)	16.6 (13.9)
Median [Min, Max]	15.0 [2.00, 100]	10.0 [1.00, 60.0]	15.0 [1.00, 100]
Missing	4 (5.2%)	7 (7.3%)	11 (6.4%)
stem.root			
	67 (87.0%)	79 (82.3%)	146 (84.4%)
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%)
stem.surface			
	53 (68.8%)	55 (57.3%)	108 (62.4%)
i	4 (5.2%)	7 (7.3%)	11 (6.4%)
i, t	1 (1.3%)	0 (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%)

	e	p	Overall
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%)
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%)
stem.color			
b, u	1 (1.3%)	0 (0%)	1 (0.6%)
e, n	1 (1.3%)	2 (2.1%)	3 (1.7%)
e, y	1 (1.3%)	0 (0%)	1 (0.6%)
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, w	2 (2.6%)	0 (0%)	2 (1.2%)
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, 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, w	2 (2.6%)	1 (1.0%)	3 (1.7%)
n, y	1 (1.3%)	1 (1.0%)	2 (1.2%)
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%)
u	1 (1.3%)	1 (1.0%)	2 (1.2%)
w	32 (41.6%)	25 (26.0%)	57 (32.9%)
w, n	2 (2.6%)	1 (1.0%)	3 (1.7%)
w, o	1 (1.3%)	0 (0%)	1 (0.6%)
w, y	1 (1.3%)	2 (2.1%)	3 (1.7%)
y	5 (6.5%)	8 (8.3%)	13 (7.5%)
e	0 (0%)	1 (1.0%)	1 (0.6%)
e, u, y	0 (0%)	1 (1.0%)	1 (0.6%)
f	0 (0%)	3 (3.1%)	3 (1.7%)
g, r, n	0 (0%)	2 (2.1%)	2 (1.2%)
g, u, n	0 (0%)	1 (1.0%)	1 (0.6%)
k	0 (0%)	1 (1.0%)	1 (0.6%)
n, e	0 (0%)	2 (2.1%)	2 (1.2%)
n, p	0 (0%)	1 (1.0%)	1 (0.6%)
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%)
w, l, n	0 (0%)	1 (1.0%)	1 (0.6%)
w, u	0 (0%)	1 (1.0%)	1 (0.6%)
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			

	e	p	Overall
	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%)
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%)
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%)
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%)
f	61 (79.2%)	76 (79.2%)	137 (79.2%)
g	2 (2.6%)	0 (0%)	2 (1.2%)
l	1 (1.3%)	1 (1.0%)	2 (1.2%)
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%)
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%)
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%)
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%)
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%)
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%)
l	1 (1.3%)	0 (0%)	1 (0.6%)
l, d	7 (9.1%)	6 (6.3%)	13 (7.5%)

	e	p	Overall
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%)
w	1 (1.3%)	0 (0%)	1 (0.6%)
g, l, d	0 (0%)	1 (1.0%)	1 (0.6%)
h, d	0 (0%)	2 (2.1%)	2 (1.2%)
m, h	0 (0%)	1 (1.0%)	1 (0.6%)
p, d	0 (0%)	2 (2.1%)	2 (1.2%)
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, a	43 (55.8%)	63 (65.6%)	106 (61.3%)
u, a, w	8 (10.4%)	4 (4.2%)	12 (6.9%)
u	0 (0%)	1 (1.0%)	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_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_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%)